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A. EDUCATION AND EMPLOYMENT INFORMATION

A1. Education

2008	Ph.D., Mechanical Eng.-Eng. Mechanics, Michigan Technological University, Houghton, Michigan (Advisor: J.W. Sutherland)
2003	M.S., Mechanical Engineering, Michigan Technological University (Advisor: J.W. Sutherland)
2001	B.S., Mechanical Engineering, Michigan Technological University

Certifications and Other Academic Preparation

2006	Graduate Certificate in Sustainability, Michigan Technological University
Spring 2005	NSF IGERT Exchange, Public Policy Ph.D. program, Southern University-Baton Rouge, Louisiana
2001	Certificate in International Business, Michigan Technological University
1996-1997	International Studies, University of Oulu (Finland) Open Campus Program

A2. Professional Experience

09/23-present	*Professor*, School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University, Corvallis, Oregon
	Leading the Industrial Sustainability Lab. Performing research, teaching, and service activities in the Advanced Manufacturing program.
08/21-present	*Director*, Energy Efficiency Center (EEC) and Industrial Assessment Center (IAC), Oregon State University
	Leading center administration and mentoring of undergraduate and graduate student analysts. Principal auditor for 5-10 industrial assessments, annually.
06/19-present	*Director*, Northwest Satellite Office of the DOE Clean Energy Smart Manufacturing Innovation Institute (CESMII), Oregon State University
	Coordinating activities of university faculty and regional industry. Assisting in organizing industry outreach and education in smart manufacturing.
05/15-09/23	*Associate Professor*, School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University
	Led the Industrial Sustainability Lab. Performed research, teaching, and service activities in the Industrial and Manufacturing Engineering program.
07/19-06/22	*Tom and Carmen West Faculty Scholar*, School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University

	Advancing the mission of leading research and educational efforts in the design, evaluation, and optimization of manufacturing systems.
09/13-08/21	*Assistant Director*, Industrial Assessment Center (IAC), Oregon State University
	Assisted the OSU IAC Director in center administration and student mentoring. Served as a principal auditor on five industrial assessments, annually.
07/19-03/20	*Fulbright-Tampere University Scholar*, Automation Technology and Mechanical Engineering, Tampere University, Finland (departure 03/20 due to COVID-19)
	Collaborated to improve sustainability of metal-based additive manufacturing processes through integrated machine learning and process modeling.
08/18-09/18	*Visiting Professor*, Mechanical Engineering and Industrial Systems, Tampere University of Technology, Tampere, Finland
	Collaborated on research applying machine learning methods for improving the sustainability performance of advanced manufacturing. Worked on creating a path for international, interuniversity advising of doctoral engineering students.
12/08-05/15	*Assistant Professor*, School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University
	Performed research, teaching, and service activities in the Industrial and Manufacturing Engineering program, focused on sustainable manufacturing.
09/11-09/13	*Faculty Mentor*, Industrial Assessment Center, Oregon State University
	Served as the principal auditor on industrial energy and productivity assessments along with a student team, including onsite assessment and final report review.
09/11-09/12	*Swigert Faculty Fellow*, School of Mechanical, Industrial, and Manufacturing Engineering, Oregon State University
	One-year fellowship to advance manufacturing research in Oregon.
08/08-12/08	*Research Engineer and Instructor*, Department of Mechanical Engineering - Engineering Mechanics, Michigan Technological University
	Assisted with proposal development for funded research of sustainability-related issues. Responsible for introductory Service Systems Engineering course.
01/04-08/08	*Graduate Research Assistant*, Department of Mechanical Engineering - Engineering Mechanics, Michigan Technological University
	Conducted research into sustainable manufacturing. Developed environmental performance models of steelmaking, sand casting, and heat treatment processes.
05/06-08/06	*Visiting Researcher*, Laboratory of Process Metallurgy, Department of Process and Environmental Engineering, University of Oulu, Finland
	Performed debugging, model development, and editing of user manual for manufacturing process flow software. Developed software tutorial for new users.
05/05-08/05	*Summer Intern*, Advanced Materials Technology, Caterpillar Inc., Peoria, IL
	Developed models of resource use, energy consumption, and waste streams for electric arc furnace steelmaking and sand casting. Reported initial modeling results for two steel chemical compositions.
09/03-12/03	*Research Assistant*, Department of Mechanical Engineering - Engineering Mechanics, Sustainable Futures Institute, Michigan Technological University

Participated in industry consortium and institute start-up activities including editing proposals and marketing materials. Edited technical publications.

08/01-08/03 *Graduate Research Assistant*, Department of Mechanical Engineering - Engineering Mechanics, Michigan Technological University

Developed models to quantify the raw materials and wastes for the production of heavy equipment components made of steel. Edited technical papers/proposals.

05/02-08/02 *Summer Intern*, Flex-N-Gate Forming Technologies, LLC, Warren, Michigan

Participated in the development and implementation of an Environmental Management System toward an unconditional recommendation for ISO14000 registration. Recommended facility energy and waste reduction opportunities.

06/01-08/01 *Undergraduate Research Assistant* (NSF-REU), Department of Mechanical Engineering - Engineering Mechanics, Michigan Technological University

Conducted research into minimum quantity lubrication and properties affecting metal cutting fluid life.

05/00-12/00 *Undergraduate Research Assistant* (Norsk Hydro), Department of Mechanical Engineering - Engineering Mechanics, Michigan Technological University

Prepared specimens, performed experiments, and made strain measurements in support of research into the hydroforming limits of extruded aluminum tubing.

Teaching and Research Interests

Life cycle engineering, manufacturing process modeling for environmental performance, production engineering, sustainable engineering education, novel sustainability approaches, e.g., micro-/nano-manufacturing processes and sustainable manufacturing systems.

B. TEACHING, ADVISING, AND OTHER ASSIGNMENTS

B1. Instructional Summary

B1.1. Credit Courses

Number	Course Title	Term/Year	Credits	Enrollment
SS2100 (at MTU)	Introduction to Service Systems Engineering	Fall 2008	3	6
ME 413*	Computer Aided Mechanical Design	Winter 2009	4	84
IE 505	Reading and Conference	Summer 2009	1	1
ENGR 407	MECOP/CECOP Seminar	Fall 2009	1	20
ME 413*	Computer Aided Design and Manufacturing	Fall 2009	4	42
IE 336	Production Engineering	Winter 2010	4	26
ENGR 407	MECOP/CECOP Seminar	Fall 2010	1	20
IE 505	Reading and Conference	Fall 2010	1	1
ME 413	Computer Aided Design and Manufacturing	Fall 2010	4	59
IE 336	Production Engineering	Winter 2011	4	26
IE 491/591	ST/Sustainable Engineering Analysis	Fall 2011	3	0/5
IE 505	Reading and Conference	Fall 2011	2	1
ME 413	Computer Aided Design and Manufacturing	Fall 2011	4	72

IE 336	Production Engineering	Winter 2012	4	41
IE 499/599	ST/Industrial Sustainability Analysis	Fall 2012	3	0/6
ME 413	Computer Aided Design and Manufacturing	Fall 2012	4	82
MFGE 336	Production Engineering	Winter 2013	4	27
IE 505	Reading and Conference	Spring 2013	1/3	1/1
IE 505	Reading and Conference	Fall 2013	1	3
ME 413	Computer Aided Design and Manufacturing	Fall 2013	4	85
MFGE 535	Industrial Sustainability Analysis	Fall 2013	3	7
MFGE 336	Production Engineering	Winter 2014	4	75
ME 505	Reading and Conference	Spring 2014	1	1
ME 413	Computer Aided Design and Manufacturing	Fall 2014	4	78
MFGE 535	Industrial Sustainability Analysis	Fall 2014	3	12
MFGE 336	Production Engineering	Winter 2015	4	49
MFGE 535	Industrial Sustainability Analysis	Fall 2015	3	17
MFGE 336	Production Engineering	Spring 2016	4	23
ME 413	Computer Aided Design and Manufacturing	Fall 2016	4	82
MFGE 535	Industrial Sustainability Analysis	Fall 2016	3	14
MFGE 336	Production Engineering	Winter 2017	4	47
IE 507	Advanced Manufacturing Seminar	Winter 2017	1	11
MFGE 535	Industrial Sustainability Analysis	Fall 2017	3	12
MFGE 336	Production Engineering	Winter 2018	4	32
MFGE 535	Industrial Sustainability Analysis	Fall 2018	3	16
MFGE 336	Production Engineering	Winter 2019	4	68
IE/MFGE 285*	Introduction to Industrial and Manufacturing Engineering	Fall 2020	3	42
MFGE 436*	Lean Manufacturing Systems Engineering	Fall 2020	4	24
MFGE 436/536*	Lean Manufacturing Systems Engineering	Winter 2021	4	60/8
MFGE 535	Industrial Sustainability Analysis	Spring 2021	3	13
MFGE 436/536	Lean Manufacturing Systems Engineering	Fall 2021	4	38/5
MFGE 535	Industrial Sustainability Analysis	Spring 2022	3	10
MFGE 436/536	Lean Manufacturing Systems Engineering	Fall 2022	4	51/4
MFGE 535	Industrial Sustainability Analysis	Fall 2022	3	7
MFGE 436/536	Lean Manufacturing Systems Engineering	Fall 2023	4	53/11
MFGE 535	Industrial Sustainability Analysis	Fall 2023	3	6
MFGE 436/536	Lean Manufacturing Systems Engineering	Winter 2024	4	67/13
* Co-taught with another instructor				

B1.2. Non-Credit Courses and Workshops

Sustainable Product Manufacturing Educational Module, Summer 2010 – I was invited to participate in a sustainable engineering workshop hosted by the Center for Sustainable Engineering

Carnegie Mellon University (July 13-14, 2009), which involved participants representing a variety of disciplines from across the US. As a result of this workshop, I was invited to develop and provide an educational module for distribution through their network. The module I developed focused on sustainability assessment of product manufacturing.

Cutting Tools and Related Machining Fundamentals (MFGE 808), Spring 2014 – Driven by growth in advanced manufacturing research capacity in the School of MIME, The Boeing Company (Fabrication Division) expressed interest in developing it as a research resource for advancing hard metals machining. I organized this two-day, eight-hour course taught by a Boeing cutting tool engineer, which was attended by 18 undergraduates, graduate students, and faculty/staff. The course was coordinated by the OSU Professional and Continuing Education program, with 13 of the student attendees registering and awarded 0.8 continuing education units (analogous to course credits) and receiving certificates.

Sustainable Additive Manufacturing Educational Module, 2016 – I was invited by CACHE (Computer Aids for Chemical Engineering) to develop an educational module under NSF SMART Research Coordination Network funding. Along with two graduate students (Amin Mirkouei and Hari Nagarajan), I developed a set of lectures, labs, and assignments, which are available as one of eleven sets of sustainable manufacturing educational modules (https://cache.org/super-store).

B1.2. Course and Curriculum Development

IE 336 (Production Engineering) Course and Lab Development, Winter 2010 – As a part of changes to the Manufacturing Engineering curriculum and based on feedback from the MIME Industry Affiliates Board (IAB), I was charged with developing IE 336. A similar course was last offered around 2002, and was the basis for much of the new course. The course is now offered as MFGE 336, and focuses on machining processes, introducing students to concepts of geometric dimensioning and tolerancing, workholding, as well as process planning for various metal removal operations. A series of labs were developed in parallel with lectures, with the assistance of a lab technician. In this version, the course also covered sustainable production – a topic now in MFGE 337. This content was based on the module developed for ME 413 in Winter 2009 (see below), and involved a hands-on life cycle assessment team project.

IE 491/591 (ST/Sustainable Engineering Analysis) Course Development, Fall 2011 – I developed this upper-level undergraduate and graduate level course to introduce students to the concepts, methods, and tools to assist sustainable engineering analysis. The first two-thirds of the course introduce students to concepts and tools through lectures and hands-on learning in the computer lab using several publicly available and/or commercially available software tools. The last part of the course focuses on a team term project. As it was a small class in Fall 2011 (5 registered graduate students, and 3 sit-in graduate students), I worked closely with the 3 project teams, and each produced a paper for publication. In addition to the project, homework, lab exercises, and exam, graduate students completed an individual literature review paper relating their research topic area to sustainability, which was submitted in thesis format.

IE 499/599 (ST/Industrial Sustainability Analysis) Course Development, Fall 2012; MFGE 535 (Industrial Sustainability Analysis) Course Development, Spring-Fall 2013 – The IE491/591 course offering was revised with the involvement of a faculty member from the College of Business

(COB), Dr. Zhaohui Wu, under a *COB/COE Seed Grant ($10,000)*, and became **IE 499/599 in Fall 2012**. This resulted in the course having greater business emphasis, including guest lectures from COB faculty and industry, as well as an industry project for one of the three student teams. The course was added to the course catalog as **MFGE 535 in Fall 2013**, and remains taught annually. It is attended by students from the School of MIME, as well as Chemical Engineering, Forestry, Wood Science and Engineering, and Food Science and Technology. Class projects have led to a number of conference and journal publications, as well as prominent aspects of at least three theses (two have been completed by students of other research advisors).

ME 413 (Computer Aided Mechanical Design) Course Development, Winter 2009 – During my first term at Oregon State, I team-taught ME 413 with Dr. Robert Paasch. As a part of this course, I created a 2-week module that introduced the concepts of sustainability and environmentally responsible design and manufacturing in a lecture format. Students completed a hands-on team project that involved completing a life cycle assessment (LCA) study for a household product. They considered options for more environmentally responsible design and manufacture and conducted a follow-up LCA study on the hypothetical new design. Students also completed an essay reflection based on a reading a book related to the topic of sustainability and globalization. This module was moved to the new IE 336 (Production Engineering) course in Winter 2010, and to MFGE 337 (Materials and Manufacturing Processes) in Winter 2013 with changes in the Manufacturing Engineering curriculum.

ME 413 (Computer Aided Design and Manufacturing) Course and Lab Development, Fall 2009, and Lab Development, Spring 2010-Fall 2011 – As a part of changes to the Manufacturing Engineering curriculum (described in Section B1.4, below), ME 413 underwent a name change in **Fall 2009** to better reflect the nature of the course. In addition, the module on sustainable design and manufacturing was replaced by a two-week module on industrial control systems, which I developed. This module included lectures that introduced the concepts of industrial control and programmable logic control (PLC), as well as assignments and a lab activity. The lab activity involved the use of lab benches, which were relocated to the new *Manufacturing Engineering Educational Laboratory (MEEL)* in Rogers Hall, which I established and maintain responsibility for. I supervised a graduate student in refurbishing three of the benches. **In 2010**, I applied for and received an *OSU Technology Resource Fee (TRF) Award* ($3,800) to expand the capacity to eight benches, completed in Fall 2011 with GTA assistance. The four existing benches with Siemens PLCs were supplemented with four setups with donated NanoLine PLCs from **Phoenix Contact**. These and four additional NanoLine PLCs and other donated parts had a value in excess of $1,600, significantly leveraging the TRF funds. This expansion was much needed with a 72-student class in 2011, up from 42 in Fall 2009 and 59 in 2010, and allowed for teams of two students to complete the lab activity in the two-hour lab session.

ME 413 (Computer Aided Design and Manufacturing) Course and Lab Development, Spring 2012-Fall 2012 – As a result of donations from Phoenix Contact, OSU TRF funds remained in 2011-2012. Thus, in Spring 2012, the four previously existing PLC benches were converted to the new components, and old, faulty components were replaced. As a result, this streamlined the lab activity, so all groups were able to base the exercise on the same instructions, resulting in less confusion and more time-efficient lab completion. Student feedback led to changes in the course, such as eliminating a simulation project, which was acted out by students, and replacing it with a homework

assignment focused on skills development. This had several benefits, including more class time to devote to instruction, better comprehension of the material, and more time for students to devote to their other projects. I feel this was a key driver for an increase in student evaluation of teaching (SET) scores in the course. The course has continued to grow, being over the capacity of 80 students in Fall of 2012 (84) and 2013 (85), and led to logistical challenges in delivery of the hands-on content, but is the core pedagogical value of the class. In addition, I supplemented the original **Boeing** guest speaker on product data management and industrial globalization issues with other speakers. In 2011, 2012, and 2013, I invited an engineer and modeler from the **Xerox** model shop (later at **Intel** and **Microsoft**, respectively) to discuss additive manufacturing. In 2013, I invited two engineers from **MiSUMi USA** to discuss industrial automation. This led to OSU's participation in the MiSUMi E.Y.E. program, resulting in material and component donations to my research and other MIME student projects.

MFGE 336 (Production Engineering) Course and Lab Development, Winter 2013 and Winter 2014 – As a part of continuing changes to the Manufacturing Engineering curriculum, IE 336 became MFGE 336 in **2012-13**. In addition, in coordination with the MFGE 337 (formerly IE 337) course owner, several changes were made, including moving the sustainable manufacturing module into MFGE 337, and introducing more coverage of machining theory and new machining labs. Based on discussions with the *Center for Teaching and Learning*, the format of the Geometric Dimensioning and Tolerancing part of the course was "flipped" with more hands on work in class, and more emphasis on reading outside of class (requiring out-of-class reading quizzes). In **2013-14**, the course became required for the Industrial Engineering curriculum, and enrollment tripled from the typical 26 students to 75 students. This presented challenges in content delivery using hands-on exercises, as well as relevance to the industrial engineers, more inclined to management topics.

B1.4. Team or Collaborative Efforts

Manufacturing Engineering Curriculum and Laboratory Development, 2009 – A key reason for creating the faculty position that I ultimately accepted within the School of MIME was to support the **Manufacturing Engineering curriculum**, which was comprised of two other main faculty members at that time. The School had received feedback from its Industry Affiliates Board (IAB) regarding improvement of the Manufacturing Engineering curriculum. I undertook responsibility for the Manufacturing Engineering curriculum in Winter 2009, as a member of the Industrial and Manufacturing Engineering Undergraduate Program Committee (IME UPC). I worked with other MIME faculty members (most closely with Dr. Brian Paul) to revise the curriculum, which was approved by the faculty in Spring 2009. I presented the changes to the IAB. The new curriculum eliminated several Industrial Engineering courses from the core, and added several Mechanical Engineering courses, taking advantage of synergies offered by the merger of the three programs within the School of MIME. A new course (IE 336) was proposed, which I subsequently developed. New faculty hires in MIME led to space reallocation. Thus, a new **Manufacturing Engineering Educational Laboratory (MEEL)** was established in Rogers Hall, adjacent to the MIME Machining Laboratory. Industrial and Manufacturing Engineering course lab space was in Covell Hall prior to the merger. The MEEL continues to serve MFGE 336 (Production Engineering), MFGE 337 (Materials and Manufacturing Processes), MFGE 413 (Computer Aided Design and Manufacturing), and MFGE 437 (Computer Control of Manufacturing Processes).

Team Teaching, Winter 2009 (ME 413, Computer Aided Mechanical Design) and Fall 2009 (ME 413, Computer Aided Design and Manufacturing) – I team-taught ME 413 with Dr. Robert Paasch for two terms. In **Winter 2009**, I assisted in labs and developed and delivered a two-week module and lab activity on environmentally responsible and sustainable design and manufacturing. I observed lectures for the balance of the term. In **Fall 2009**, I assisted in labs and developed and delivered a two-week module and lab activity on industrial control systems and programmable logic control (PLC). I held instructional responsibility for the second half of the term.

Team Course Development, IE4xx/5xx and BA 4xx/5xx (Life Cycle Analysis: Sustainable Manufacturing and Supply Chains), Fall 2011-Spring 2012 – Dr. Zhaohui Wu (College of Business) and I received a COB/COE seed grant ($10,000) from the Division of Business and Engineering to develop the course to be jointly offered in Business and Engineering. As mentioned above, this course was offered in Fall 2012 as IE499/599 (Industrial Sustainability Analysis), and was approved through the Category II process as MFGE 535 in Fall 2013.

Manufacturing Engineering Curriculum and Laboratory Development, 2012-2014 – In evaluating the impact of changes to the Manufacturing Engineering curriculum from 2009 (discussed above), the Manufacturing Engineering faculty recognized several deficiencies and redundancies in IE 336 and IE 337, mainly due to the need to serve both the Manufacturing Engineering and Industrial Engineering undergraduate programs. Thus, the courses were restructured by myself (course owner of IE336) and Brian Paul (course owner for IE337) with new topical coverage, new learning outcomes, laboratory reallocation, and new laboratory funds from the School of MIME based on the joint work and proposal by manufacturing faculty. This led to MFGE 336 and MFGE 337 offered in Winter 2013, and changes in the required manufacturing process-related course in the Industrial Engineering program from MFGE 337 to MFGE 336 in Winter 2014. This allowed MFGE 337 to focus on the application of engineering science to a variety of manufacturing processes by the Manufacturing Engineering students, for which Industrial Engineering students were not prepared due to different program requirements.

MFGE 413 (Computer Aided Design and Manufacturing) Course Revision, 2019 – Changes in ABET Criterion 3 (a-k) Student Outcomes across the College of Engineering in 2019-2020 led to a remapping of course learning outcomes (CLOs) to Manufacturing Engineering Student Outcomes (SOs 1-7 and aa-ee). These changes, as well as changes to the B.S. Manufacturing Engineering curriculum in 2018-2019 necessitated changes to ME 413, a core course in Manufacturing Engineering (ME 413 is a popular course with Manufacturing track students in Industrial Engineering and Mechanical Engineering students interested in careers in manufacturing. Several needed changes were noted: (1) PLC programming previously covered in ME 413 shifted to MFGE 437; (2) Industry is seeking students with entrepreneurial thinking, as evidenced by the new ABET outcomes, as well as industry and OSU (e.g., Advantage Accelerator) input; and (3) Computer-aided engineering software availability and capability has changed. Due to these changing needs, the class structure and CLOs were found to over-emphasize product data management and CNC machine operation. I worked closely with the manufacturing engineering instructor, Mr. Scott Campbell, who has taught the course a number of times to propose a major revision of the course. The new class structure and CLOs emphasize using CAD/CAM tools and techniques to gain competitive advantage by considering broader impacts of design and manufacturing. The central focus of the course is a term project in which each student develops a business case for a product

based on design and manufacturing efficiency. To accommodate these changes, an extra lab session was added, allowing students to get proctored instruction on CAD/CAM software tools from the lab instructor and teaching assistants. The course modifier also changed from ME to MFGE to more accurately reflect its disciplinary nature, grounded in manufacturing.

Manufacturing Engineering Curriculum Revision, 2017-2018 – Prior to 2018, the OSU B.S. Manufacturing Engineering (MfgE) Program consisted of a standalone degree in MfgE with an emphasis on manufacturing systems. With a small number of additional credit hours, Industrial Engineering (IE) students interested in manufacturing could receive dual majors in Manufacturing Engineering and Industrial Engineering. Over the years, the MfgE faculty received feedback from the MIME Industrial Advisory Board (IAB) and Multiple Engineering Cooperative Program (MECOP) companies regarding the desire to extend undergraduate MfgE program content to Mechanical Engineering (ME) students. In particular, many MECOP and IAB companies were hiring and retraining ME students and graduates in the concepts of MfgE due to a lack of students. Working with the MECOP Manufacturing Committee, IAB Manufacturing Education Task Force, and Undergraduate Head Advisor, I led the MfgE faculty in an overhaul of the B.S. MfgE degree to introduce a product development emphasis, that meets the needs of ME students interested in manufacturing. They are able to pursue dual majors in Manufacturing Engineering and Mechanical Engineering by taking a small number of additional credit hours. Consequently, the new MfgE program has two primary "arches" (manufacturing systems and product development) and "keystones" (resulting in two officially recognized, transcript-visible undergraduate options). As a result of this curriculum change, the number of students enrolled in the MfgE major increased from 50 in Winter 2018 to 236 in Winter 2022, and the number of students receiving MECOP internships increased dramatically.

Team Course Development, MFGE 436/536 (Lean Manufacturing Systems Engineering), 2020-2021 – With the departure of the prior course owner, I began planning redevelopment of the course with consideration of coronavirus restrictions (remote lectures and labs) in Spring 2020 for the Fall 2020 (MFGE 436) and Winter 2021 (MFGE 436/536) course offerings, through discussions with Dr. Brian Paul and Mr. Scott Campbell (lab instructor). The course was offered completely remotely, with a term project (design of a birdhouse manufacturing system/factory) and an online tool replacing in-person labs. With a shift to in-person teaching in Fall 2021, an entire sequence of new hands-on labs was developed, underpinning a term-long project to design a bird house factory. Course content was reorganized to better support the lab sequence, and was delivered in Winter 2022 by an instructor and two graduate teaching assistants. We held conversations with Auburn University in Spring 2022 to initiate joint course development for lean manufacturing engineering.

Online Mechatronics Engineering Curriculum, 2020-present – In Spring 2019, I submitted a proposal to the NSF ECR: Production Engineering Education and Research (ECR: PEER) program, along with co-PIs from advanced manufacturing (Dr. Andy Fan), industrial engineering (Dr. David Kim), psychology (Dr. Chris Sanchez), and Clackamas Community College (Mr. Michael Mattson), as well as senior personnel from advanced manufacturing (Dr. Burak Sencer) and electrical engineering (Dr. Matt Johnston). The proposal was to establish an online mechatronics certificate through OSU Ecampus, and would explore the effectiveness of at-home and in-person labs. The proposal was supported by OSU Ecampus (Alfonso Bradoch) and the College of Engineering (Carley Ries). Funding for the project ($1.84M) was which was awarded in Summer 2019 for a

January 2020 start date. Since that time, four new courses have been approved (MFGE 241, MFGE 341, MFGE 441, and MFGE 442), with the first three developed, and development of the fourth nearing completion. The certificate was approved in Spring 2021, and is expected to be awarded to the first students in Spring 2023.

B1.5. International Teaching

EU Intensive Programme, Spring 2012 – I developed and delivered a set of three lectures on sustainable design and manufacturing in collaboration with Dr. Gül Kremer (Penn State) and Dr. Kyoung-yun Kim (Wayne State) for a European Union Intensive Programme on Sustainability Management and Technology held May 27-June 9, 2012 in Bethune, France (http://ipsmt-bethune2012.ouvaton.org/). In addition, this provided data for our NSF CI-TEAM Demonstration project, which developed a cyber-based platform for sustainable product development.

NSF Pan-American Studies Institute (PASI) on Manufacturing Innovation through Sustainable Design, Summer 2013 – I participated as a co-PI on the multi-institution proposal to fund this two-week workshop for doctoral students and early career researchers held in Barranquilla, Colombia (http://pasi.eng.wayne.edu/) during July 13-27, 2013. I was a member of the organizing committee, which included development of the program schedule; soliciting and evaluating participant applicants; and preparing and delivering a lecture on unit manufacturing process modeling to support sustainability assessment.

Fulbright-Tampere University Scholar, 2019-2020 – My Fulbright Scholar Award covered both teaching and research responsibilities. I served as a Guest Lecturer in Digital Manufacturing (MEI-51026) in Fall 2019, where I developed and delivered two lectures introducing the students to the concepts of smart manufacturing. In Spring 2020, I was co-instructor (with Prof. Eric Coatanéa) in Systems Engineering (MEI-19006). The course used a flipped classroom and was project-oriented. I introduced a modified Scrum method for agile team project design for the student teams to use, and provided whole-class feedback based on weekly team quad charts. Scrum meetings were held during class time, with myself and Prof. Coatanéa first introducing topical materials and then providing direct feedback to project teams. The course ended (just prior to the coronavirus pandemic) with a robot competition.

B3. Advising

B3.1. Graduate Advisees - Completed

Ph.D. Student Advisees - Graduated

1. Hao Zhang, IE (OSU, co-advisor J. Calvo), December 2014, "A Framework for Integrating Systems Thinking into Sustainable Manufacturing" **(2014 IE Outstanding GRA Award)**
2. Babak Lajevardi, IE (OSU, co-advisor B. Paul), June 2015, "Energy Analysis of Novel Data Center Cooling Technology: Evaporative Cooling System Operation and Microchannel Heat Exchanger Manufacturing"
3. Amin Mirkouei, IE (OSU), June 2016, "Techno-Economic Optimization and Environmental Impact Analysis for a Mixed-Mode Upstream and Midstream Forest Biomass to Bio-Products Supply Chain" **(2015 IE Outstanding GTA Award)**
4. Anh Tong, IE (OSU, co-advisor J. Calvo), December 2017, "Integration of Systems Thinking, Viable System Model, and System Dynamics toward Systemic Sustainability Assessment Methodology"

5. Kamyar Raoufi, IE (OSU), August 2020, "Integrated Manufacturing Process and System Analysis to Assist Sustainable Product Design" **(2020 College of Engineering GRA Award)**
6. Arvind Shankar Raman, ME (OSU), March 2022, "An Information Modeling Framework for Support of Sustainable Manufacturing System Design Decision Making"
7. Hari P.N. Nagarajan, MEI (TAU, co-advisor: E. Coatanéa), December 2022, "Development of a Graph-Based Metamodelling Framework for Additive Manufacturing and its Simulation Using Machine Learning"
8. Suraj Panicker, MEI (TAU, co-advisor: E. Coatanéa), February 2023, "Knowledge-based Modelling of Additive Manufacturing for Sustainability Performance Analysis and Decision Making"

M.S. Thesis Student Advisees - Graduated

1. Malcolm O. Brown, IE (OSU), June 2011, "A Process Based Modeling Approach for Economic and Environmental Assessment of Nano-Assisted Manufacturing" **(2011 IE Outstanding GRA Award)**
2. Misha V. Sahakian, IE (OSU), September 2011, "Machining and Toxicological Performance of a Zinc Oxide Metalworking Nanofluid" **(2011 IE Outstanding GTA Award)**
3. Dane D. Eastlick, ME (OSU), March 2012, "Improving Manufacturing Sustainability Assessment in Product Design"
4. Ahmed J. Alsaffar, IE (OSU), March 2012, "Process-Based Modeling for Cradle-to-Gate-Energy and Carbon Footprint Reduction in Product Design"
5. Hao Zhang, IE (OSU), June 2012, "Integrating Sustainable Manufacturing Assessment into Decision Making for a Manufacturing Work Cell"
6. Preedanood (Mim) Prempreeda, IE (OSU), September 2012, "Investigation of the Environmental Impacts of Wind Energy and Supplemental Energy Systems using a Life Cycle Approach"
7. Pantea Mirzaie, IE (OSU), May 2013, "A Supply Chain Model for Optimizing Fixed and Mobile Bio-Oil Refineries at a Regional Scale"
8. Qi Gao, IE (OSU), December 2013, "An Economic and Environmental Assessment Model for Microchannel Device Manufacturing" **(2013 IE Outstanding GTA Award** and **2013 College of Engineering GTA Award)**
9. Zachary Southworth, IE (OSU), December 2013, "Bottom-up Cost Modeling for Vanadium Redox Flow Battery Component Manufacturing"
10. Faraz Niyaghi, IE (OSU), May 2014, "Evaluation of Zinc Oxide Metalworking Nanofluid Stability and Related Biological Response"
11. Seyedhamed Seyedmahmoudi, IE (OSU), May 2014, "Sustainability Assessment during Early Product Development: The Manufacturing Case and the Use Case"
12. Michael Eastwood, ME (OSU), June 2014, "Assessing Steel Bevel Gear Design Alternatives for Sustainability Performance through Unit Manufacturing Process Modeling"
13. Tasha Larson, IE (OSU, co-advisor C. Eseonu), September 2014, "Defining and Comparing Risks and Success Measures of the Reference Design Process and Traditional New Product Development Processes"
14. Ian Garretson, IE (OSU), September 2015, "A Unit Manufacturing Process Characterization Methodology and Supporting Terminology for Sustainable Manufacturing Assessment" **(2015 IE Outstanding GRA Award)**

15. Harsha Malshe, IE (OSU), September 2016, "A Techno-Economic Assessment Methodology for Advanced Additive and Joining Processes"
16. Michael Doran, ME (OSU), September 2016, "Characterization of Two Novel Machining Processes for Difficult to Machine Materials"
17. Matteo Smullin, IE (OSU), December 2016, "An Information Modeling Framework and Desktop Application to Compose Unit Manufacturing Process Models for Sustainable Manufacturing Assessment"
18. Hari P.N. Nagarajan, IE (OSU), June 2017, "Enabling Design for Energy Efficient Additive Manufacturing"
19. Javad (Kiarash) Sadeghi, IE (OSU), June 2018, "Assisting Sustainability Analysis of Forest Bioenergy Supply Chains using Mathematical Optimization"
20. Saroj Karki, IE (OSU, co-advisor B. Fronk), July 2018, "Enabling Feasibility Assessment of Solar Thermal Energy Systems for Industrial Process Heating Applications"
21. Rothanak Chan, ME (OSU, co-advisor M. Campbell), August 2018, "Automated Rapid Manufacturing Feedback for Design Considering Advanced Joining Processes"
22. Sriram Manoharam, IE (OSU), May 2019, "Process Information Modeling for Characterizing Sustainability Performance of Cyclic Manufacturing Processes"
23. Sai Srinivas Desabathina, IE (OSU, co-advisor Z. Fan), June 2019, "Multi-Sensor Data Fusion for Specific Energy Estimation in a Surface Grinding Process"
24. Matthew Thomas, ME (OSU, co-advisor: B. Fronk), May 2023, "Modeling Hop Kilning with Respect to Energy Consumption and Drying Kinetics"
25. Maritza Perez, IE (OSU), June 2023, "Evaluating the Effect of Emotions on Student Learning using Prescriptive and Open-ended Lab Activities for a Lean Manufacturing Engineering Course"

M.S. Project Student Advisees - Graduated

1. Alex Cimino-Hurt, IE (OSU), May 2015, "Assessing Operational and Environmental Performance of Electric Hot Milling via In-Depth and Screening Unit Process Life Cycle Inventory Approaches" **(2015 SME 30 Under 30 Award)**
2. Scott Campbell, ME (OSU), June 2016, "Application of Design Scorecards and Sustainability Assessment Tools in the Iterative Development of a Novel Wooden Bicycle Frame"
3. Alberto Pezzani, IE (OSU), September 2016, "Defining the Structure and Functionality of a Software-Based Industrial Energy Audit Tool"
4. Suraj Panicker, IE (OSU), December 2017, "A Triple Bottom Line Methodology for Assessing the Sustainability Performance of Continuous Web-Manufacturing Processes"
5. Aditya Salvi, IE (OSU), June 2023, "Development of an Efficient and Effective Project Management System for a University Manufacturing Job Shop"
6. Anuj Gupte, IE (OSU), July 2023, "Development of a Smart Machining Multi-Sensor System for Process Monitoring"

Diploma Thesis (Master Degree) Advisee - Graduated

1. Natalie Traut, Mechanical and Process Engineering (University of Kaiserslautern, Germany), June 2012, "Design of Wave Energy Devices with Remanufacturing Considerations" (co-Supervisor: Dipl.-Ing. Johannes Siebel, University of Kaiserslautern, Germany, hosted at OSU January-June 2012)

B3.2. Graduate Advisees - Current

Ph.D. Student Advisees - Current

1. Thidarat Sawai, ME (OSU), exp. 2024, Sustainable Energy Systems
2. Asmaa Harfoush, IE (OSU), exp. 2024, Smart Manufacturing
3. Eray Aksit, ME/MATS (OSU, co-major: I. Ghamarian), exp. 2025, Additive Manufacturing
4. Dolor Enarevba, ME (OSU), exp. 2026, Sustainable Manufacturing
5. Mahdi Kabiri, ME (OSU), exp. 2026, Sustainable Manufacturing

M.S. Thesis Student Advisees - Current

1. David Brown, ME (OSU), exp. Spring 2024
2. Dolor Enarevba, ME (OSU), exp. 2024
3. Mahdi Kabiri, ME (OSU), exp. 2024
4. Mario Israel Riofrio Sabando, ME (OSU), exp. 2024
5. Md. Tahjib Rafat, ME (OSU), exp. 2025

B3.3. Graduate Thesis or Project Committees

M.Eng. Advisor:

Graduated

1. Nima Dolatnia, IE (OSU), April 2013
2. Walter (Clint) C. Clow, IE (OSU), March 2016
3. Asmaa Harfoush, IE (OSU), June 2022
4. Kaushik Gijare, IE (OSU), December 2023

Minor Professor or Committee Member:

Ph.D. Committee Member - Graduated

1. Santosh Tiwari, IE (OSU, Advisor: B.K. Paul), March 2010, "Nickel Nanoparticle-Assisted Diffusion Brazing of Stainless Steel for Microfluidic Applications"
2. Robert Nagel, ME (OSU, Advisor: R.B. Stone), June 2010, "A Design Framework for Identifying Automation Opportunities"
3. Valmikanathan Onbattuvelli, IE (OSU, Advisor: S.A. Atre), December 2010, "The Effects of Nanoparticle Addition on the Powder Injection Molding of SiC and AlN"
4. Kerry Poppa, ME (OSU, Advisor: R.B. Stone), August 2011, "Theory and Application of Vector Space Similarity Measures in Computer Assisted Conceptual Design"
5. Diane Van Scoter, IE (OSU, Advisor: T.L. Doolen), October 2011, "Discovering the Relationship between Project Complexity and Critical Success Factors"
6. Prawin Paulraj, IE (OSU, Advisor: B.K. Paul), February 2012, "Adhesive Microlamination Protocol for Low-Temperature Microchannel Arrays"
7. Ravindrandh Eluri, IE (OSU, Advisor: B.K. Paul), March 2012, "Nanoparticle-Assisted Diffusion Brazing of Metal Microchannel Arrays: Nanoparticle Synthesis, Deposition and Characterization"
8. Yasaman Mehravaran, IE (OSU, Advisor: R.L. Logendran), April 2013, "Hybrid Flowshop Scheduling with Dual Resources in a Supply Chain"
9. Bryan O'Halloran, ME (OSU, Advisor: R. Stone), May 2013, "A Framework to Model Reliability and Failures in Complex Systems During the Early Engineering Design Process"

10. Barath Palanisamy, IE (OSU, Advisor: B.K. Paul), June 2013, "Micromixer Assisted Continuous Flow Synthesis of Nanoparticles of Binary Compounds and Their Application"
11. Wei-Tau (Mike) Lee, IE (OSU, Advisor: K.L. Funk), November 2013, "About Good Work"
12. Mir Abbas Bozorgirad, IE (OSU, Advisor: R.L. Logendran), December 2013, "Bi-Criteria Group Scheduling with Learning in Hybrid Flow Shops"
13. Daniel Peterson, IE (OSU, Advisor: B.K. Paul), May 2014, "Fluidic and Thermal Modeling for the High Production Rate Synthesis of High Quality Nanoparticles"
14. Joseph Piacenza, ME (OSU, Advisor: C. Hoyle), May 2014, "Design of Robust Infrastructure Systems Incorporating User Behavior"
15. Mohammad Yazdani, IE (OSU, Advisor: R.L. Logendran), May 2014, "Group Scheduling in Electronics Manufacturing with Integration of Internal and External Setup Times"
16. Woraruthai (Aom) Choothian, IE (OSU, Advisor: T.L. Doolen and C. Eseonu), December 2014, "A Study of the Application of Lean Practices to New Product Development Processes"
17. Saeed Ghanbartehrani, IE (OSU, Advisor: J.D. Porter), December 2015, "Efficient Algorithms for Solving the Median Problem on Real Road Networks"
18. Omid Shahvari, IE (OSU, Advisor: L. Logendran), August 2017, "Bi-Criteria Batching and Scheduling in Hybrid Flow Shops"
19. Brandon Massoni, ME (OSU, Advisor: M. Campbell), September 2018, "AI Decomposition of Complex Parts for Manufacturing with Advanced Joining Processes"
20. Mohammad Ali Davar Panah, ME (OSU, Chair: B. Paul), December 2018, "Incremental Forming of Polymers at Room Temperature"
21. Patrick McNeff, IE (OSU, Advisor: B. Paul), July 2019, "Manufacturing Process Design and Electrically-Assisted Embossing of a Microchannel Solar Receiver"
22. Venkata Rajesh Saranam, IE (OSU, advisor B. Paul, replaced as committee member due to final defense scheduling conflict), March 2020, "Foam Core Meniscus Coating and Diffusion Bonding for Energy Application"
23. Steven Hattrup, IE (OSU, Advisor: K. Funk), June 2020, "The Design of Good Work"
24. Vincenzo Ferrero, ME (OSU, Advisor: B. DuPont), April 2021, "Data-Driven Environmentally Sustainable Product Design: A Shift Toward Increased use of Sustainable Design Activities in the Early Design Phase"
25. Chuankai Song, ME (OSU, Advisor: B. Paul), January 2024, "Manufacturing Process Innovation for Devices and Materials in Thermal Applications"

Ph.D. Committee Member - Current

1. Samaneh Sobhani, ME (OSU, Advisor: A. Fan), exp. 2024
2. Stephanie Lawson, ME (OSU, Advisor: S. Pasebani), exp. 2024

M.S. Thesis Committee Member - Graduated

1. James Vlieg, IE (OSU, Advisor: B.K. Paul), June 2010, "Development of a Radial Microlamination Architecture for the Fabrication of Cylindrical Microchannel Arrays"
2. Luke Fisher, ME (OSU, Advisor: R.B. Peterson), June 2010, "Single- and Multi-functional Arrayed Microchannel Fluidic Devices"
3. Gopi Lingam, IE (OSU, Advisor: B.K. Paul), September 2010, "Cooling Rate Limitations in the Diffusion Bonding of Large Microchannel Arrays"
4. Clayton Hires, IE (OSU, Advisor: B.K. Paul), December 2010, "Uniform Residence Time in Micro-Assisted Solution Deposition of CdS Thin-Films for CIGS Photovoltaic Cells"

5. Ji Ling, IE (OSU, Advisor: T.L. Doolen), April 2011, "An Investigation of Chinese Quality Circle Effectiveness: Critical Success Factors and Outcomes"
6. Lindsay Wiseman, IE (OSU, Advisor: T.L. Doolen), May 2011, "Evaluating the Effectiveness and Efficiency of Continuous Improvement Training"
7. Trenton Carpenter, ME (OSU, Advisor: R.K. Paasch), June 2011, "Global Distributed Design of a Formula SAE Race Car"
8. Vaibhav Pandya, IE (OSU, Advisor: R.L. Logendran), June 2011, "A Methodology for Scheduling Jobs in a Flexible Flowshop with Sequence Dependent Setup Times and the Possibility of Machine Skipping"
9. Dongchen Lu, IE (OSU, Advisor: R.L. Logendran), November 2011, "Bi-Criteria Group Scheduling with Sequence-Dependent Setup Time in a Flow Shop"
10. Juergen Lenz, IE (OSU, Advisor: S. Atre), March 2012, "Material and Process Design for Powder Injection Molding of Silicon Nitride for the Fabrication of Engine Components"
11. Joseph Piacenza, ME (OSU, Advisor: C. Hoyle), April 2012, "Sustainable Building Design Framework: An Integrated Approach, candidate for MS in Mechanical Engineering"
12. Leif Steigleder, IE (OSU, Advisor: B.K. Paul), June 2012, "A Microchannel Thermal Management System for Absorbent Based Hydrogen Storage"
13. Babak Lajevardi, IE (OSU, Advisor: B.K. Paul), September 2012, "Laser Keyhole Welding for the Microlamination of a High-Temperature Microchannel Array"
14. Samuel Brannon, IE (OSU, Advisor: B.K. Paul), June 2013, "Development of an Economical High Temperature Microchannel Recuperator for Solid Oxide Fuel Cells"
15. Marc Whitehead, ME (OSU, Advisor: R. Albertani), June 2013, "Design and Manufacturing Study of Hydroelectric Turbines Using Recycled and Natural Fiber Composites"
16. Erin Collins, ME (OSU, Advisors: R. Paasch, B. Batten), March 2014, "Alternative Design Considerations for a Wave Energy Converter: A Sustainability Approach"
17. Kiumars Zolfaghari, IE (OSU, Advisor: K. Funk), November 2014, "Medical Diagnosis: A Functional Model and Diagnostic Aid"
18. Tanida Chongviwailan, IE (OSU, Advisor: J. Calvo), May 2015, "A Theoretical Framework to Capture Stakeholders' Perspectives for the Design of Collaborative Communication Structures for Specialized Organizations"
19. Brandon Massoni, ME (OSU, Advisor: M. Campbell), May 2016, "Dividing Complex Parts into Multiple Pieces for Advanced Joining and Additive Manufacturing"
20. Addison Wistoff, ME (OSU, Advisor: B. DuPont), May 2016, "Using Automation to Understand Sustainable Design Trade-Offs and to Promote Environmental Sustainability in the Early Design Phase"
21. Derrick Risner, Food Sci/Tech (OSU, Advisor: L. Goddick), March 2018, "A Guide to the Fermentation and Distillation of Whey for Potable Spirit Production"
22. Dheeraporn Nippaya, IE (OSU, Advisor: J.D. Porter), March 2018, "A Metaheuristic Approach for Facilities Location with Balanced Allocation of Customers"
23. Vincenzo Ferrero, ME (OSU, Advisor: B. DuPont), May 2018, "Environmentally Sustainable Product Design: Understanding the Environmental Impact of Product Function and Product Labeling"
24. Steven Kawula, ME (OSU, Advisor: B. Paul), September 2018, "A Manufacturing Process Design for Producing an Adhesive-Bonded Membrane based Energy Recovery Ventilator with High Aspect Ratio Support Ribs"

25. Alan Grier, ME (OSU, Advisor: M. Campbell), May 2019, "Automated Tradeoff Analysis of Cost Versus Machinability for Design Feedback"
26. Donovan Ross, ME (OSU, Advisor: B. DuPont), June 2019, "Exploring the Effectiveness of Providing Structured Design for the Environment Knowledge during the Conceptual Design Phase"
27. Raphael Arbelaez, WSE (OSU, Advisor: L. Schimleck), November 2019, "Exploratory Study of Salvaged Lumber as Feedstock for Cross-Laminated Timber (CLT)"
28. Melissa Tensa, ME (OSU, Advisor: B. DuPont), May 2021, "Environmental Sustainability During the Early Design Phase: Understanding the Uncertainty in the Use Phase, Visualization, and Automating Design Repository Curation"
29. Carter Marr, ME (OSU, Advisor: J. Parmigiani), June 2021, "Synthetic Lubricant Performance in Enclosed Gearbox Applications at Extreme Temperature"

M.S. Project Committee Member - Graduated
1. Adam Rahrer, ME (OSU, Advisor: R.B. Stone), September 2013, "Designing and Creating the Oregon State Age and Disability Simulation Suit"
2. Bradley Moore, IE (OSU, Advisor: J. Calvo), September 2015, "Framework and Method for Designing Complementarist Interventions to Address Management Challenges Systemically in Small Organizations"
3. Haomiao Zhang, IE (OSU, Advisor: K.L. Funk), May 2016, "West Africa Infectious Disease Diagnosis Aid (WAIDDA) Development"

M.S. Project Committee Member - Current
1. Gaurav Jagtap, IE (OSU, Advisor: D. Lin), exp. 2024

M.Eng. Committee Member - Graduated
1. Mishal Albassam, IE (OSU, Advisor: J. Calvo), February 2020

Graduate Council Representative:

*Ph.D. Committee Member (*Graduate Council Representative) - Graduated*
1. Paravee Vas-Umnuay*, ChemE (OSU, Advisor: C.-H. Chang), April 2013, "Growth, Characterization and Applications of Copper Sulfide Thin Films by Solution-Based Processes"
2. Lapyote Prasittisopin*, CivEng (OSU, Advisor: D. Trejo), December 2013, "Chemical Transformation of Rice Husk Ash for Sustainable, Constructable, and Durable Binary Cementitious System"
3. Justin Pommerenck*, ChemE (OSU, Advisor: A. Yokochi), November 2015, "Nonthermal Plasma Microreaction Engineering at Gas and Liquid Interfaces"
4. Benjamin Buford*, EE (OSU, replaced as GCR due to final oral exam scheduling), July 2016, "Modeling, Fabrication, and Characterization of Magnetic Thin Films for Integrated Inductor and MRAM Applications"
5. Syed Mohammad Hossein Tabatabaie*, BEE (OSU, Advisor: G. Murthy), August 2017, "Integrated Spatio-temporal Sustainability Analysis of Biofuels Using Biogeochemistry, Economic and Life Cycle Analysis"
6. Nan Zhang*, CivE (OSU, Advisor: M. Evans), April 2018, "Numerical Simulations and Microscale Analyses of Offshore Anchor-Granular Material Systems"

7. Masoud Ghodrat Abadi*, CivE (OSU, Advisor: D. Hurwitz), May 2018, "Transportation Infrastructure to Support Bicycling: Design and Operational Considerations"
8. Dan Huang*, ChemE (OSU, Advisor: G. Jovanovic), March 2019, "An Investigation on Modeling the Effect of Catalyst Support on Bio-Hydrogenated Diesel Production Using Density Functional Theory"
9. Wei Xu*, Chem (OSU, Advisor: V. Remcho), July 2020, "New Graphite Intercalation Chemistry with Alkaline Earth Metals"
10. Robin Garg*, EE (OSU, Advisor: A. Natarajan), June 2021, "Fully Integrated mm-Wave Full-duplexing and MIMO Multi-beamforming Receiver Techniques for 5G and Beyond"
11. Lucas Freiberg*, ChemE (OSU, Advisors: N. AuYeung, G. Jovanovic), March 2022, "Process Intensification towards Reduced Exergy Destruction in Methane Upgrading"

*Ph.D. Committee Member (*Graduate Council Representative) - Current*

1. Jessica Peterson*, EE (OSU, Advisor: J. Conley), exp. 2024
2. Nora Basha*, ECE (OSU, Advisor: B. Hamdaoui), exp. 2025
3. Tanvir Shifat*, ECE (OSU, Advisor: T. Brekken), exp. 2025
4. Mostafa Essawy*, ECE (OSU, Advisor: A. Natarajan), exp. 2026
5. Stephanie Adams*, CivE (OSU, Advisor: S. Brown), exp. 2027
6. Tanner Field*, CivE/WoodSci (OSU, Advisors: A. Barbosa/A. Sinha), exp. 2027

*M.S. Thesis Committee Member (*Graduate Council Representative) - Graduated*

1. Jessica Young*, CivEng (OSU, Advisor: A.W. Stuedlin), May 2012, "Uplift Capacity and Displacement of Helical Anchors in Cohesive Soil"
2. Keely Heintz*, ChemEng (OSU, Advisor: J. McGuire), August 2012, "Synthesis and Evaluation of PEO-Coated Materials for Microchannel-Based Hemodialysis"
3. Lei Jin*, EE, (OSU, Advisors: J. Zhang, T. Brekken), March 2015, "DC Bus Capacitor Discharge of Permanent Magnet Synchronous Machine Drive Systems for Hybrid/Electric Vehicles"
4. Guoheng Ma*, ChemE (OSU, Advisor: C. Chang), March 2016, "Synthesis of Plasmonic-Enhanced Metal-Organic Framework Thin Films and Infrared Sensing Applications"
5. Philip Kness*, EE, (OSU, Advisor: A. Weisshaar), June 2018, "Hardware-Based Security Enhancement for Near Field Communication and Other Close Proximity Inductive-Based Communication Systems"
6. Cheng-Ting Chen*, ChemE (OSU, Advisor: W. Rochefort), December 2022, "The role of material properties in an ISBM process to manufacture Polypropylene Bottles from Virgin and PCR Resins"

*M.S. Thesis Committee Member (*Graduate Council Representative) - Current*

1. Tanner Field*, CivE/WoodSci (OSU, Advisors: A. Barbosa/A. Sinha), exp. Winter 2024
2. Anthony Kung*, ECE (OSU, Advisor: L. Chen), exp. Spring 2024
3. Stephanie Adams*, CivE (OSU, Advisor: S. Brown), exp. 2024
4. Cheng-Hsiao Tsai*, ChemE (OSU, Advisor: C.-H. Chang), exp. 2025

B3.4. Undergraduate Research Assistants

1. Kyle Franks, ME (MTU), 2007, web page designer for J.W. Sutherland
2. Brandon Quig, ME (MTU), 2008, web page designer for J.W. Sutherland

3. Garrett Hoofman, CS (MTU), 2008, web page designer for J.W. Sutherland
4. Misha Sahakian, IE (OSU), Summer 2009, undergraduate researcher, nano-metalworking fluids
5. Claire Oshatz, IE (OSU), Summer 2011, undergraduate researcher, manufacturing cost modeling
6. Nathan Klammer, ME (California Polytechnic State University, San Luis Obispo), Summer 2011, undergraduate researcher, alternative energy analysis and nano-assisted metal cutting
7. Steven Hattrup, MFGE (OSU), Summer 2011, undergraduate assistant, product disassembly
8. Tim Heneveld, MFGE (OSU), Winter 2012, URISC:Start, product disassembly
9. Daniela Rodriguez Casallas, IE (UNAL, Colombia), Fall 2012, visiting undergraduate researcher, life cycle assessment of alternative energy systems
10. Ian Garretson, IE (OSU), Spring-Summer 2013, undergraduate research assistant (Boeing), sustainable manufacturing assessment method and model development
11. Jackson Santee, IE (OSU), Spring 2013, URSA:Engage undergraduate research assistant, sustainable manufacturing systems
12. Christopher Eastwood, CompE (OSU), Spring-Fall 2013, URSA:Engage undergraduate research assistant, sustainable manufacturing assessment tool development
13. Scott Lindbloom, MFGE (OSU), Fall 2013-Spring 2014, URISC undergraduate research assistant, electrically-assisted machining
14. Anthony Farr, ME (OSU), Winter, Spring, Fall 2014, URSA:Engage undergraduate research assistant, sustainable manufacturing systems engineering
15. Trent Cayetano, Gen. Engr. (OSU), Winter, Spring, Fall 2015, STEM Leaders Program, undergraduate research assistant, sustainable manufacturing systems engineering
16. Supriya Kapur, IE (OSU), Spring/Fall 2015-Winter 2016, undergraduate assistant, NSF CooL:SLiCE Project
17. Soe Lyian Toe, ESE (OSU), Fall 2015-Spring 2016, URISC undergraduate research assistant, energy use in additive manufacturing
18. Rothanak Chan, IE (OSU), Winter-Summer 2016, undergraduate assistant, Boeing Project
19. Keaton Corder-Swanson, IE (OSU), Fall 2016, undergraduate assistant, Boeing Project
20. Emily Severson, IE (OSU), Fall 2016-Spring 2017, undergraduate assistant, Boeing Project
21. Yiye (Stella) Xu, CivE (OSU), Fall 2016-Spring 2017, undergraduate assistant, ODOT Project
22. Tuong Hoang, ME (OSU), Winter 2018, undergraduate assistant, NSF CooL:SLiCE Project
23. Emily Liu, CS (OSU), Winter-Spring 2018, undergraduate assistant, MIME Undergraduate Research Experience program, assistance with NSF CooL:SLiCE Project
24. Preston Baker, MfgE (OSU), Winter-Spring 2018, undergraduate assistant, MIME Undergraduate Research Experience program, assistance with hybrid manufacturing project
25. Ella Mudry, ME (OSU), Winter-Spring 2019, undergraduate assistant, URSA Engage, hybrid additive-subtractive machine structure development
26. Dustin Harper, ME (OSU), Winter-Spring 2018, undergraduate assistant (URSA Engage Award), hybrid additive-subtractive machine; Fall 2019, undergrad assistant (NSF RAMP Workshop project)
27. Connor Wilson, CS (OSU), Winter-Spring 2019, undergraduate assistant (URSA Engage Award), hybrid additive-subtractive machine control; Fall 2019, website (CESMII project); Winter 2020, website (West faculty scholar award)
28. Kekeli Gbofu, IE (OSU), Fall 2020-Winter 2021, undergraduate assistant (work-study, West Scholar), smart manufacturing (AI in metalforming)

29. Brianna Corbett, IME (OSU), Winter-Spring 2021, undergraduate assistant, smart and sustainable manufacturing (unit process information modeling) (DeLoach Work Scholarship)
30. America Pacheco, CS (OSU), Winter-Spring 2022, STEM Leaders Program, undergraduate assistant, OSU Energy Efficiency Center database development
31. Daniel Sayre, IE (OSU), Fall 2022, undergraduate assistant, smart manufacturing
32. Rosemary Meskell, IE (OSU), Winter 2023, undergraduate assistant, sustainable manufacturing
33. Gabrielle Paul, IE (OSU), Winter 2023, undergraduate assistant, engineering education
34. Jordan Cook, CS (OSU), Winter-Spring 2024, undergraduate assistant (URSA Engage Award), industrial energy efficiency
35. David Hartnett, IE (OSU), Winter-Spring 2024, undergraduate assistant (URSA Engage Award), online manufacturing marketplace (process modeling)
36. Chris Ho, CS (OSU), Winter-Spring 2024, undergraduate assistant (URSA Engage Award), online manufacturing marketplace (computer programming)

B3.5. Postdoctoral Trainees

1. Ioana Corina Bogdan, PhD, Fall 2021-Fall 2022, Research Associate supporting NSF MECHATRONIC project, online mechatronics course module development
2. Ahmed Elhabashy, PhD, Spring 2023-present, Research Associate supporting NIST/MxD project, online product marketplace modeling and software development
3. Baldur Steingrimsson, PhD, Summer 2023, Research Associate supporting NSF MECHATRONIC project, online mechatronics course module development

B3.6. Other Advising

Professional Supervision

1. W. Jayani Jayasuriya (Ph.D. ME), July 2022-present, Energy Efficiency Engineer
2. Adam Boyd (M.S. ME), July 2022-present, Energy Efficiency Engineer

B.S. Honors Thesis Advisees - Graduated

3. Mary Elizabeth (Mary Beth) Vanlue, IE (OSU), December 2010, "A Method to Effectively Measure Sustainability in Non-Profit Organizations"
4. Olivia Girod, IE (OSU, Co-Advisor: J. Calvo-Amodio), June 2014, "A Hybrid-Dynamic Transition Phase for High Mix Low Volume Manufacturers" **(2014 SME 30 Under 30 Award)**
5. Allison Martz, ME (OSU), June 2022, "Identification of Barriers to Industrial Energy Efficiency Improvement in the Pacific Northwest" **(2022 Outstanding ME Senior Award)**
6. David Brown, ME (OSU), June 2023, "Life Cycle Analysis of Mass Timber and Reinforced Concrete Three-Story Structures"

B.S. Honors Thesis Committee Service - Graduated

1. Mishal Albassam, IE (OSU, Advisor: J. Calvo-Amodio), March 2014, "The Steps Taken to Design, Select, and Manufacture a Shoe Press for a Small Shoe Manufacturing Company"
2. Jack Bellville, ME (OSU, Advisor: B. DuPont), May 2015, "Exploring Sustainable Design Methods Through the Redesign of a Commuting Bicycle"
3. Sadie Boyle, ME (OSU, Advisor: B. DuPont), May 2016, "Exploring Processes that Foster Innovative and Sustainable Product Design"
4. Ian Sargent, IE (OSU, Advisor: D. Kim), December 2018, "The Impact of Material Handling on Manufacturing Process Plan Selection"

Senior Project Advising

1. Brent Hughes, Derek Sugiyama, and Mary Beth Vanlue, Furniture Recycling Process and Measures, **Sponsor:** Benton Furniture Share, 2009-2010.
   Paper: Hughes, B., D. Sugiyama, and M.B. Vanlue, 2010, "Process Improvement in a Non-Profit Organization," *Proceedings 2010 Capstone Design Conference*, July 7-9, Boulder, CO.
2. Sam Brannon, Brandon Johnsen, and Michael Visser, Wireless Tool Monitoring System, **Sponsor:** School of Mech/Ind/Mfg Engineering (OSU), 2009-2010.
3. Jonathan Glazner, Arthur Muñoz, Bryan Williams, Development of a Process for Testing the Machining Performance of Nanofluids, **Sponsor:** OSU Industrial Sustainability Laboratory, **Partners:** OSU Nanotoxicology Laboratory, Microproducts Breakthrough Institute, Master Chemical, Boeing, 2010-2011.
4. Bryan Hudspeth, Simon Manso, Alexander Skrydlak, Development of a Knife Testing Device, **Sponsor:** Benchmade Knife Company, 2010-2011.
5. Co-advised two teams with J. Calvo (Ph.D. advisee Hao Zhang served as mentor): Team 1: Matt Munson, Dat Ho, Chris Thompson; Team 2: Jake Ralston, Mudhyan AlMudhyan, Mohammed Alqahtani, Design of a Production Scheduling System, **Sponsor:** Sheldon Manufacturing Inc., 2013-2014.
6. Co-advised two teams with J. Calvo (Ph.D. advisee Hao Zhang served as mentor): Team 1: Joel Duhn, Cameron Cruz, Ashleigh Brinkman; Team 2: Adam Strength, James Amrheim, Olivia Girod, Design of Express Line of High Running Products, **Sponsor:** Sheldon Manufacturing Inc., 2013-2014.
7. Joel Knapp, Ankit Patel, Yierfan Haimiti, Design of Lean Pull System, **Sponsor:** Sheldon Manufacturing Inc., 2014-2015 (Ph.D. Advisees Hao Zhang and Anh Tong served as mentors).
8. Awad Albaqawi, Andrew Dix, Carsten Haase, Shoe Press, **Sponsor:** Soft Star Shoes, Winter-Spring 2015.
9. Ryan Johnson, Nick Dodge, Andres Uribe, Metal Detection Process Redesign and Improvement, **Sponsor:** Oregon Freeze Dry, 2015-2016.
10. Samuel Aditya, Kyle Eckrich, Amy Masoni, Development of a Model for Sustainable System Assessment, (Ph.D. Advisee Anh Tong serving as mentor). **Sponsor:** Industrial Sustainability Lab, **Partners:** Dr. Javier Calvo (OSU Reliable Systems Engineering and Change Management Lab), Dr. Jason Ideker (CivE), Oregon Department of Transportation, 2016-2017.
11. Abdulrhman Alahmadi, Abdullah Alyahya, Mohammed Alabdullatif, Sustainable Supply Chain Management, (Ph.D. Advisee Kamyar Raoufi serving as mentor). **Sponsor:** OSU Industrial Sustainability Laboratory, **Partners:** Iowa State University, Pennsylvania State University, Wayne State University, Fall 2016.
12. Warren Mead, William Landsiedel, Christopher Lambangsaputra, Sustainable Supply Chain Management, (Ph.D. Advisee Kamyar Raoufi serving as mentor). **Sponsor:** OSU Industrial Sustainability Laboratory, **Partners:** Iowa State University, Pennsylvania State University, Wayne State University, Winter-Spring 2017.
13. Jimi Witt, Bryan Madison, Ulises Morales, Abdullah Bin Howban, Laundromat Heat Recovery, **Sponsor:** local laundromat business, Winter-Spring 2018.
14. Oliver Price, Thong Pham, Gabe Fanning, Andra Yahya, Fixture Design, **Sponsor:** 9Wood, Fall 2020-Winter 2021.
15. Co-advised with J.D. Porter (M.S. advisee Chris Houck served as mentor): Kirk Anderson, Michael Callaway, Bianka Diaz, Ashley Hollis, Peyton Kenny, Mahima Raval, Manufacturing Resourcing Model, **Sponsor:** Lam Research, Winter-Spring 2021.

16. Elizabeth Clark, Jackson Guettler, Aurora Prochot, Chika Ronny, Finding Recycling Options and Designing Alternative Uses for the HDPE Vacuum Tubing Waste, **Sponsor:** College of Forestry (Dr. Eric Jones), Fall 2021-Winter 2022.
17. Abdulaziz Almaktary, Noah Berti, Daniel Sayre, Salman Semy, Reducing Automotive Shredder Residue, **Sponsor:** Pacific Recycling Inc., Winter-Spring 2023.

High School Student Supervision and Mentoring

1. Albert Cai, Crescent Valley High School (Corvallis, OR), Summer 2012, Saturday Academy: Apprenticeships in Science & Engineering Program, product disassembly and documentation
2. Brandon Murray, Camas High School (Camas, WA), Summer 2015, Saturday Academy: Apprenticeships in Science & Engineering Program, product disassembly and documentation; Summer 2016, Professional Development Internship Program, software development for sustainable manufacturing tool
3. Natalie Dupuy, Crescent Valley High School (Corvallis, OR), Summer 2016, Saturday Academy: Apprenticeships in Science & Engineering Program, sustainable product development; Summer 2017, Volunteer Researcher, sustainable manufacturing research
4. Jennifer Yang, Corvallis High School (Corvallis, OR), Summer 2017, Saturday Academy: Apprenticeships in Science & Engineering Program, sustainable product development

Undergraduate Learning Assistant Supervision

1. Carter Frainey, IE (OSU), Fall 2022, MFGE 436/536 lab assistance
2. Gabrielle Paul, IE (OSU), Fall 2022, MFGE 436/536 lab assistance
3. Rosemary Meskell, IE (OSU), Fall 2023, MFGE 436/536 lab assistance
4. William Bothwell, IE (OSU), Fall 2023-Winter 2024, MFGE 436/536 lab assistance
5. Saegis Abbot, ME (OSU), Winter 2024, MFGE 436/536 lab assistance

Graduate Teaching Assistant Supervision

1. Srikar Vallury, IE (OSU), Spring 2009, ME 413 lab development
2. Misha Sahakian, IE (OSU), Fall 2009-Spring 2010, ME 413 and IE 336; **Recipient of the 2011 IE Outstanding GTA Award**
3. Hao Zhang, IE (OSU), Fall 2010/Fall 2011/Fall 2012, ME 413 and IE 336
4. Walter Clow, IE (OSU), Spring 2011, ME 413 and IE 336 lab development
5. Anthony Nix, ME (OSU), Fall 2011, ME 413
6. Qi Gao, IE (OSU), Winter 2012-Spring 2013, ME 413, IE/MFGE 336, manufacturing lab development; **Recipient of the 2013 IE Outstanding GTA Award** and **2013 College of Engineering GTA Award**
7. Kunal Kate, IE (OSU), Winter 2012, IE 336
8. Joseph Piacenza, ME (OSU), Fall 2012, ME 413; **Recipient of the 2014 ME Outstanding GTA Award**
9. Yasaman Mehravaran, IE (OSU), Winter 2013, MFGE 336
10. Ian Garretson, IE (OSU), Fall 2013, ME 413
11. Kijoon Lee, IE (OSU), Fall 2013, ME 413
12. Seyedhamed Seyedmahmoudi, IE (OSU), Winter 2014, MFGE 336
13. Tylee Cairns, IE (OSU), Winter 2014, MFGE 336
14. Katarina Morowsky, IE (OSU), Winter 2014, MFGE 336; **Recipient of the 2014 IE Outstanding GTA Award**

15. Samuel Brannon, IE (OSU), Fall 2014, ME 413
16. Harish Irrinki, IE (OSU), Fall 2014, ME 413
17. Amin Mirkouei, IE (OSU), Fall 2013/Fall 2014, ME 413; Winter 2015/Spring 2016, MFGE 336; Spring 2014, MFGE lab development; **Recipient of the 2015 IE Outstanding GTA Award**
18. Steven Hattrup, IE (OSU), Spring 2016, ME 413 lab development
19. Hari P.N. Nagarajan, IE (OSU), Winter 2015, MFGE 336; Spring 2015, ME 413 lab development; Fall 2016, ME 413
20. Michael Dexter, ME (OSU), Fall 2016, ME 413
21. Mukhtar Maulimov, ME (OSU), Fall 2016, ME 413
22. Suraj Panicker, IE (OSU), Spring 2016/Winter 2017, MFGE 336
23. Elham Mirkoohi, ME (OSU), Winter 2017, MFGE 336
24. Sai Desabathina, IE (OSU), Fall 2017/Fall 2018, MFGE 535; Winter 2019, MFGE 336
25. Sriram Manoharan, IE (OSU), Winter 2018, MFGE 336
26. Alec Temes, ME (OSU), Winter 2018, MFGE 336
27. Taewan Lee, ME (OSU), Winter 2019, MFGE 336
28. Gregory Nigon, MATS (OSU), Winter 2019, MFGE 336
29. Kevin Carpenter, ME (OSU), Winter 2021, MFGE 436/536
30. Asmaa Harfoush, IE (OSU), Fall 2020, Winter 2021, Fall 2021, Fall 2022 MFGE 436/536
31. Dolor Enarevba, ME (OSU), Fall 2022, Fall 2023-Winter 2024, MFGE 436/536
32. Adam Bischoff, ME (OSU), Fall 2023, MFGE 436/536
33. Md Tahjib Rafat, ME (OSU), Winter 2024, MFGE 436/536
34. Saad Ahmad, ME (OSU), Winter 2024, MFGE 436/536

Other Student Supervision and Mentoring

1. Vikas Malpani, M.S. ME (MTU), 2007, paper contributor
2. Hannes Hapke, M.S. EE (OSU), 2009, paper contributor
3. Babak Lajevardi, M.S. IE (OSU), Spring 2010, graduate researcher, environmental optimization of manufacturing systems
4. Gorka Rodrigo Asensio, M.S. IE (Universidad Politécnica de Valencia, Spain), October 2010-April 2011, research intern, sustainable wind energy research
5. Mohsen Ebrahimi, M.S. IE (OSU), Fall 2013, graduate researcher, manufacturing process development and analysis
6. David Headrick, B.S. CS (OSU), Fall 2018-Spring 2019, mentee, Faculty-Student Mentor Pilot Program
7. Taylor Westbrook, B.S. BioHlth (OSU), Fall 2018-Spring 2019, mentee, Faculty-Student Mentor Pilot Program
8. Christopher Houck, M.S. IE (OSU), Fall 2020-Summer 2021, graduate researcher, future manufacturing workforce development and labor resource allocation improvement

Faculty advisor, OSU Chapter of the Society of Manufacturing Engineers, Fall 2009-Summer 2019. During this period, the chapter was active with members assisting in School of MIME and College of Engineering service activities. The main annual event was the organization of mock interviews with industry to coincide with the Winter Career Fair. OSU SME also organized seminars and tours to local industry, as well as a Get-to-Know-Your-Professor events and a weekly Snack-and-Study to offer peer mentoring in a casual environment. Members assisted with the 2011

SME/ASME/JSME Manufacturing Conference held on campus. As advisor, I was responsible for writing many letters of nomination for SME Education Foundation scholarships. Students have been quite successful, receiving more than 65 scholarships (not including 2015 and 2016 due to missing data), including the nationally competitive Joseph F. Novek Outstanding Leader Award (Brent Hughes, 2010, Sarah Trevisiol, 2018, and Avery Nofziger, 2020), Future Leaders of Manufacturing Scholarship (Andrew Bluett, 2011, Olivia Girod and Alexandria Moseley, 2012, Seth Wiberg, 2013, Michael Tankus, 2017, and Danielle Dow, 2018), and Directors Scholarship (Dylan Kearney, 2010, Kimberly Daeschel, 2011, Alexandria Moseley, 2010/2012, Olivia Girod, 2013, and Carl Rydell, 2019). I nominated the following past OSU SME members who were honored with the *SME 30 Under 30 Award*: Alexandria Moseley (2013), Olivia Girod (2014), Alex Cimino-Hurt (2015), Katie Merrill (2017), Parth Khimsaria (2018).

Faculty co-advisor, OSU Chapter of the Society of Manufacturing Engineers, Fall 2020-present. Due to the COVID-19 pandemic, operations were virtual during 2020-2021, with no new members and no activity. I and the faculty advisor (Dr. Zhaoyan Fan) maintained relations with SME Global and the Willamette Valley professional chapter of SME, which also curtailed its activities. In March 2022, I coordinated with the professional chapter to secure support for ten new student memberships. As a result of this generosity and a resumption of their events, we were able to recruit members and organize a planning meeting in April 2022, where four new officers were elected. Their task is to complete paperwork with SME and OSU, and to initiate plans for 2022-23.

Faculty advisor, OSU Chapter of the Surface Mount Technology Association, Fall 2012-Fall 2013. During this period, the chapter had its first organized meeting with the professional chapter in two years. The chapter was small, with only a handful of active members, and advising returned to the primary faculty advisor in Fall 2013 upon his return from a sabbatical year.

B4. Other Assignments

Faculty mentor, OSU Industrial Assessment Center, Fall 2011-Summer 2013. In this role, I led teams of 4-6 undergraduate and graduate students in the assessment of five industrial facilities per year. I conducted the final review of the student report of recommendations (100-200 pages) for energy efficiency and productivity improvements for small and medium enterprises.

Assistant Director, OSU Industrial Assessment Center, Fall 2013-Spring 2021. In this role, I led teams of 4-6 undergraduate and graduate students in the assessment of five industrial facilities per year (assessments were curtailed/virtual during the COVID-19 pandemic from Spring 2020-Spring 2021). I conducted the final review of the student reports (100-200 pages) for energy efficiency and productivity improvements for small and medium enterprises. In addition, I assisted the Director with administrative duties of the center, including contributing to personnel decisions, student training and mentoring, and improving assessment and reporting process efficiency.

Director, OSU Energy Efficiency Center and Industrial Assessment Center, Summer 2021-present. In this role, I hold primary responsibility for center operations, including coordinating administrative duties and managing space and equipment. Through Spring 2022, I have worked closely with a faculty assistant director, who is leaving OSU in Summer 2022, necessitating the hiring of professional faculty to support student training and industry auditing. The OSU EEC coordinates a number of small applied research projects, as well as the DOE-funded IAC program

(one of 30 across the US), employing 10-12 undergraduate student analysts and 2-3 graduate research assistants at one time. During 2021-2026, the OSU IAC is coordinating with four Lane Community College faculty/staff to employ 8-10 additional students to conduct commercial building assessments, as part of a DOE-funded pilot project for nine selected IACs. This pilot supplements the industrial assessment program for small and medium manufacturers and water/ wastewater treatment facilities. Annually, the OSU IAC will conduct 20 industrial assessment and 10 commercial building assessments, requiring close coordination with industrial clients, utilities, and a number of governmental and non-governmental organizations. I am working toward a future vision for the OSU EEC to serve as a go-to resource for applied industrial energy and sustainable manufacturing research, education, and workforce development in the Pacific Northwest. We have been working on this goal, developing funded project partnerships with the City of Portland, the Washington State University Energy Program, the Bonneville Power Administration, and the Clean Energy Smart Manufacturing Innovation Institute – where the EEC serves as a virtual satellite office for the CESMII Western Smart Manufacturing Innovation Center in the Northwest.

C. SCHOLARSHIP AND CREATIVE ACTIVITY

C1. Publications

C1.1. Books & Book Chapters

(* Graduate Student; ** Undergraduate Student; † Corresponding Author)

1. **Haapala, K.R.** †, S.V. Atre, R. Enneti, I.C. Garretson*, H. Zhang*, 2018, "Materials Processing," Chapter 3 in *Energy Efficient Manufacturing with Applications*, J. Sutherland ed., Wiley-Scrivener; 1 Ed., Salem, MA, ISBN: 978-1-118-42384-4. (Invited; lead author)
2. Hapke, H.M.*†, Wu, Z., **K.R. Haapala**, and T.K.A. Brekken, 2011, "Wind Power, Energy Technology, and Environmental Impact Assessment," Chapter 16 in *Volume II: The Global Supply Web: Designing Managing, and Measuring; The Business of Sustainability: Trends, Policies, Practices, and Stories of Success*, S. G. McNall, J. C. Hershauer, and G. Basile, eds., Praeger, An Imprint of ABC-CLIO, LLC, Santa Barbara, CA. (Invited; established outline and coordinated authorship; directed student author and contributed to LCA study)
3. Clarke-Sather, A.R.*†, T.L. Jenkins*, **K.R. Haapala**, and J.W. Sutherland, 2010, "Sustainable Production," *Encyclopedia of Geography*, B. Warf, Ed., SAGE Publications, Thousand Oaks, CA, pp. 2763-2767. (Invited; co-authored with Ph.D. advisor and two other students)

C1.2. Refereed Journal Publications

(* Graduate Student; ** Undergraduate Student; † Corresponding Author)

Under Review

1. Sadeghi, J.†*, M.Q. Hasan Abadi, J.R. Huscroft, and **K.R. Haapala**, "A renewable energy production for sustainable development: A hybrid machine learning algorithm and circular supply chain management," Annals of Operations Research, ANOR-D-23-02535, in review (submitted November 14, 2023).
2. Lee, E.T.*, S.S. Desabathina*, D. Porter, **K.R. Haapala**, and A. Fan†, "Estimating Specific Energy for a Surface Grinding Process using Multi-Sensor Data Fusion," *Measurement*, MEAS-D-23-08021, in review (submitted November 7, 2023).

3. Fu, X.*, Z. Fan†, B. Sencer, K.R. Haapala, 'Thermal Signal-enhanced Unscented Kalman Filter for Tool Wear Prediction," *Int. J. of Mechatronics and Manufacturing Systems*, IJMMS-187867, in review (submitted December 31, 2023).
4. Raoufi, K.*† and **K.R. Haapala**, "Operational Performance Evaluation of a Manufacturing Process and System (MaPS) Sustainability Analysis Tool for Engineering Education," *Journal of Engineering Education*, in review (submitted February 4, 2024).
5. Harfoush, A. *†, Z. Fan, **K.R. Haapala**, "Experimental Studies on Multistage Single Point Incremental Forming of Thin High Carbon Steel Sheet," *Int. J. of Advanced Manufacturing Technology*, in review (submitted February 6, 2024).

Appeared and in Press

1. Alhamouri, K. I. *†, J. T. O'Connor, K. R. Haapala, B. K. Paul, 2024, "Conceptual Range Estimation for Total Cost of Ownership of Modular Process-Intensified Chemical Plants," *Journal of Advanced Manufacturing and Processing*, DOI: 10.1002/amp2.10176, in press. (Contributing author as member of research project team; student author advised by O'Connor)
2. Raoufi, K.*† and **K.R. Haapala**, 2024, "Manufacturing Process and System (MaPS) Sustainability Analysis Tool: A Proof-of-Concept for Teaching Sustainable Product Design and Manufacturing Engineering," *Journal of Manufacturing Science and Engineering*, Vol. 146, No. 2, pp. 020904 (19 pages), DOI: 10.1115/1.4064071. (Advisor of Ph.D. student lead author)
3. Harfoush, A. *†, **K.R. Haapala**, and I. Ghamarian, 2023, "Parametric Effects of Single Point Incremental Forming on the Hardness of High Carbon Steel Sheets," *The International Journal of Advanced Manufacturing Technology*, DOI: 10.1007/s00170-023-12527-2, 11 pages. (Advisor of Ph.D. student lead author)
4. Shankar Raman, A. *†, K.C. Morris, and **K.R. Haapala**, 2023, "Reusing and Extending Standards-Based Unit Manufacturing Process Models for Characterizing Sustainability Performance," *Journal of Computing and Information Science in Engineering*, Vol. 23, No. 2, pp. 021005 (12 pages), DOI: 10.1115/1.4054487. (Advisor of Ph.D. student lead author)
5. Ramanujan, D., W.Z. Bernstein, N. Diaz-Elsayed, and **K.R. Haapala**, 2023, "The Role of Industry 4.0 Technologies in Manufacturing Sustainability Assessment," *ASME Journal of Manufacturing Science and Engineering*, Vol. 145, No. 1, pp. 010801 (18 pages), DOI: 10.1115/1.4055661 (invited co-author of ASME MED state-of-the-art paper).
6. Haapala, K.R.†, K. Raoufi*, K.-Y. Kim, P.F. Orazem, C.S. Houck*, M.D. Johnson, G.E. Okudan Kremer, J.L. Rickli, F.M. Sciammarella, and K. Ward, 2022, "Prioritizing Actions and Outcomes for Community-based Future Manufacturing Workforce Development and Education," *Transactions of the SDPS: Journal of Integrated Design and Process Science*, Vol. 26, No. 3-4, pp. 415-441, DOI: 10.3233/JID-220007. (Lead author, advisor of M.S. and Ph.D. student co-authors)
7. Elliott, R.L.†, C.G. Loh, C.E. Psenka, J.M. Lewis, K.-Y. Kim, **K.R. Haapala**, and G.E. Okudan Kremer, 2022, "Advancing Transformative STEM Learning: Converging Perspectives from Education, Social Science, Mathematics, and Engineering," *Transactions of the SDPS: Journal of Integrated Design and Process Science*, Vol. 26, No. 3-4, pp. 393-414, DOI: 10.3233/JID-220006. (Contributing author)

8. Panicker, S.*†, H.P.N. Nagarajan*, J. Tuominen, M. Patnamsetty, E. Coatanéa, **K.R. Haapala**, J. Rämö, 2022, "Thermal Influence on Weld Microstructure and Mechanical Properties in Wire and Arc Additive Manufacturing of Steels," *Materials Science & Engineering A*, Vol. 853, No. 15, 143690 (13 pp.). https://doi.org/10.1016/j.msea.2022.143690. (Co-advisor of Ph.D. student lead author)
9. Raoufi, K.*, **K.R. Haapala**†, T. Etheridge, S. Manoharan*, B.K. Paul, 2022, "Cost and Environmental Impact Assessment of Stainless Steel Microscale Chemical Reactor Using Conventional and Additive Manufacturing Processes," *Journal of Manufacturing Systems*, Vol. 62, pp. 202-217, DOI: 10.1016/j.jmsy.2021.11.017. (Advisor of Ph.D. student lead author)
10. O'Connor, J.T., C.P. Kowall, **K.R. Haapala**, N.V. Agrawal*†, B.K. Paul, 2021, "Specialty Chemicals Production Case Study: Economic Analysis of Modular Chemical Process Intensification vs. Conventional Stick-Built Approaches," *Journal of Advanced Manufacturing and Processing*, Vol. 3, No. 4, e10102 (13 pp.), 10.1002/amp2.10102. (Contributing author as member of research project team; student author advised by O'Connor)
11. Shankar Raman, A.*†, **K.R. Haapala**, O'Connor, J.T., and B.K. Paul, 2021, "Economic Risk Analysis for the Capture of a Distributed Energy Resource using Modular Chemical Process Intensification," *Journal of Advanced Manufacturing and Processing*, Vol. 3, No. 4, e10096 (15 pp.), DOI: 10.1002/amp2.10096. (Advisor of Ph.D. student lead author, with collaborators)
12. Zhang, H.†, A. Veltri, J. Calvo, **K.R. Haapala**, 2021, "Making the Business Case for Sustainable Manufacturing in Small and Medium-sized Manufacturing Enterprises," *Journal of Cleaner Production*, Vol. 287, pp. 125038, DOI: 10.1016/j.jclepro.2020.125038. (Co-advisor of Ph.D. student lead author, along with third author advisor and faculty collaborator)
13. Coatanéa, E.†, H.P.N. Nagarajan*, S. Panicker*, R. Prod'hon, H. Mokhtarian, A. Chakraborti*, H. Paris, I. Flores Ituarte, and **K.R. Haapala**, 2021, "Systematic Manufacturability Evaluation using Dimensionless Metrics and Singular Value Decomposition: A Case Study for Additive Manufacturing," *International Journal of Advanced Manufacturing Technology*, Vol. 115, pp. 715-731, DOI: 10.1007/s00170-020-06158-0, (Co-advisor of Ph.D. student second and third authors, along with first author advisor; fast-tracked from 30th FAIM Conference).
14. DeCarolis, J.F.†, P. Jaramillo, J.X. Johnson, D.L. McCollum, E. Trutnevyte, D.C. Daniels, G. Akın-Olçum, J. Bergerson, S. Cho, J.-H. Choi, M.T. Craig, A.R. de Queiroz, H. Eshraghi, C.S. Galik, T.G. Gutowski, **K.R. Haapala**, B.-M. Hodge, S. Hoque, J.D. Jenkins, A. Jenn, D.J.A. Johansson, N. Kaufman, J. Kiviluoma, Z. Lin, H.L. MacLean, E. Masanet, M.S. Masnadi, C.A. McMillan, D.S. Nock, N. Patankar, D. Patino-Echeverri, G. Schively, S. Siddiqui, A.D. Smith, A. Venkatesh, G. Wagner, S. Yeh, Y. Zhou, 2020, "Leveraging Open Source Tools for Collaborative Macro-Energy System Modeling Efforts," *Joule*, Vol. 4, No. 12, pp. 2523-2526, DOI: 10.1016/j.joule.2020.11.002. (Contributing author as part of Open Energy Outlook team)
15. Haapala, K.R. †, K.-Y. Kim, G.E. Okudan Kremer, R. Kubat, R. Shilkrot, F. Sciammarella, 2020, "An Open Online Product Marketplace to Overcome Supply and Demand Chain Inefficiencies in Times of Crisis," *Smart and Sustainable Manufacturing Systems*, Vol. 4, No. 3, pp. 299-302, DOI: 10.1520/SSMS20200055. (Lead author of industry/university author team)
16. Raoufi, K. †*, D.S. Harper**, **K.R. Haapala**, 2020, "Reusable Unit Process Life Cycle Inventory for Manufacturing – Metal Injection Molding," *Production Engineering - Research*

and Development, Vol. 14, pp. 707-716, DOI: 10.1007/s11740-020-00991-8. (Advisor of Ph.D. student lead author and mentor to undergraduate assistant)

17. Sutherland, J.W.†, S.J. Skerlos, **K.R. Haapala**, D. Cooper, F. Zhao, 2020, "Industrial Sustainability: Reviewing the Past and Envisioning the Future," *ASME Journal of Manufacturing Science and Engineering*, Vol. 142, No. 11, 110806 (16 pages), DOI: 10.1115/1.4047620. (Invited contributing author for ASME MED 100th anniversary issue)
18. Raoufi, K.R.*, B.K. Paul, and **K.R. Haapala**†, 2020, "Development and Implementation of a Framework for Adaptive Undergraduate Curricula in Manufacturing Engineering," *Smart and Sustainable Manufacturing Systems*, Vol. 5, No. 2, pp. 1-21, DOI: 10.1520/SSMS20200008. (Advisor of Ph.D. student lead author)
19. Shankar Raman, A. †*, **Haapala, K.R.**, Raoufi, K.*, Linke, B.S., Bernstein, W.Z., and Morris, K.C., 2020, "Defining Near-term to Long-term Research Opportunities to Advance Metrics, Models, and Methods for Smart and Sustainable Manufacturing," *Smart and Sustainable Manufacturing Systems*, Vol. 4, No. 2, pp. 1-24. https://doi.org/10.1520/SSMS20190047. (Advisor of Ph.D. students: lead author, third author)
20. Manoharan, S.*†, Harper, D.S.**, and **K.R. Haapala**, 2020, "Characterizing the Sustainability Performance of Cyclic Manufacturing Processes: A Hybrid Manufacturing Case," *International Journal of Sustainable Manufacturing*, Vol. 4, Nos. 2-4, pp. 216-233, DOI: 10.1504/IJSM.2020.107125 (Fast-tracked from *16th Global Conference on Sustainable Manufacturing (GCSM)*, Lexington, Kentucky, October 2-4, 2018). (Advisor of M.S. student lead author, mentor of B.S. student second author)
21. Nagarajan, H.P.N.†*, Panicker, S.*, Mokhtarian, H., Remy-Lorit, T., Coatanéa, E., Chakraborti, A., Prod'hon, R., Jafarian, H., **Haapala, K.R.**, 2019, "Graph-based Meta-modeling for Characterizing Cold Metal Transfer (CMT) Process Performance," *Smart and Sustainable Manufacturing Systems*, Vol. 3, No. 2, pp. 169-189, DOI: 10.1520/SSMS20190026. (Co-advisor of Ph.D. student lead and second author; provided guidance and editing)
22. Ferrero, V.*, A. Shankar Raman*, **K.R. Haapala**, B. DuPont†, 2019, "Validating the Sustainability of Eco-Labeled Products Using a Triple-Bottom-Line Analysis," *Smart and Sustainable Manufacturing Systems*, Vol. 3, No. 1, pp. 31–52, DOI: 10.1520/SSMS20190022. (Advisor of Ph.D. student second author, extension of course project by both students)
23. Karki, S.*, **K.R. Haapala**†, and B.M. Fronk, 2019, "Technical and Economic Feasibility of Solar Thermal Energy Systems for Small and Medium Manufacturers," *Applied Energy*, Vol. 254, pp. 113649 (16 pages), DOI: 10.1016/j.apenergy.2019.113649. (Co-advisor of M.S. student author)
24. Raoufi, K.†*, A.K. Wisthoff**, B.L. DuPont, and **K.R. Haapala**, 2019, "A Questionnaire-based Methodology to Assist Non-Experts in Selecting Sustainable Engineering Analysis Methods and Software Tools," *Journal of Cleaner Production*, Vol. 229, pp. 528-541, DOI: 10.1016/j.jclepro.2019.05.016. (Advisor of Ph.D. student lead author)
25. Sadeghi, J.†* and **K.R. Haapala,** 2019, "Optimizing a Sustainable Logistics Problem in a Renewable Energy Network Using Genetic Algorithm," *OPSEARCH*, pp. 1-18, DOI: 10.1007/s12597-019-00356-5. (Advisor of M.S. student author)

26. Karki, S.*, B.M. Fronk†, and **K.R. Haapala**, 2019, "Investigation of the Combined Efficiency of a Solar/Gas Hybrid Water Heating System," *Applied Thermal Engineering*, Vol. 149, pp. 1035-1043, DOI: 10.1016/j.applthermaleng.2018.12.086. (Co-advisor of M.S. student author)
27. Raoufi, K.†*, K. Park, M.T. Hasan Khan*, **K.R. Haapala,** C.E. Psenka, K.L. Jackson, G.E. Okudan Kremer, and K.-Y. Kim, 2019, "A Cyberlearning Platform for Enhancing Undergraduate Engineering Education in Sustainable Product Design," *Journal of Cleaner Production*, Vol. 211, pp. 730-741, DOI: 10.1016/j.jclepro.2018.11.085. (Advisor of Ph.D. student lead author)
28. Raoufi, K.†*, S. Manoharan*, and **K.R. Haapala**, 2018, "Synergizing Product Design Information and Unit Manufacturing Process Analysis to Support Sustainable Engineering Education," *ASME Journal of Manufacturing Science and Engineering*, Vol. 141, No. 2, pp. 021018 (13 pages). DOI:10.1115/1.4042077. (Advisor of M.S. and Ph.D. student authors)
29. Nagarajan, H.P.N. †*, Mokhtarian, H.*, Jafarian, H.*, Dimassi, S.*, Bakrani-Balani, S.*, Hamedi, A.*, Coatanéa, E., Wang, G.G., and **Haapala, K.R.**, 2018, "Knowledge-Based Design of Artificial Neural Network Topology for Additive Manufacturing Process Modeling: A New Approach and Case Study for Fused Deposition Modeling," *ASME Journal of Mechanical Design*, Vol. 141, No. 2, pp. 021705 (12 pages). DOI: 10.1115/1.4042084. (Co-advisor of Ph.D. student lead author; provided guidance and editing)
30. Tong, A.†*, J. Calvo-Amodio, J., and **K.R. Haapala,** 2018, "Integration of Sustainability Indicators and the Viable System Model toward a Systemic Sustainability Assessment Methodology," *Systems Research and Behavioral Science*, Vol. 35, Issue 5, pp. 564-587, DOI: 10.1002/sres.2553. (Co-advisor of Ph.D. student author)
31. Nagarajan, H.P.N.†* and **K.R. Haapala,** 2018, "Characterizing the Influence of Resource-Energy-Exergy Factors on the Environmental Performance of Additive Manufacturing Systems," *Journal of Manufacturing Systems*, Vol. 48, Part A, pp. 87-96, DOI: 10.1016/j.jmsy.2018.06.005. (Advisor of M.S. student author)
32. Seyedmahmoudi, S.H.*, **K.R. Haapala**†, K.-Y. Kim, and G.E. Kremer, 2018, "Energy and Carbon Footprint Reduction during Textile-based Product Design and Manufacturing," *International Journal of Strategic Engineering Asset Management*, Vol. 3, No. 2, pp. 109-133 DOI: 10.1504/IJSEAM.2018.092231. (Advisor of M.S. student author; OSU had the primary role in the research)
33. Risner, D.*, A. Shayevitz*, **K. Haapala,** L. Meunier-Goddik, P. Hughes†, 2018, "Fermentation and Distillation of Cheese Whey: Carbon-Dioxide Equivalent Emissions and Water Use in the Production of Whey Spirits and White Whiskey," *Journal of Dairy Science*, Vol. 101, Issue 4, pp. 2963-2973, DOI: 10.3168/jds.2017-13774. (Directed M.S. student lead author, extension of course project)
34. Bernstein, W.Z.†, A. Bala Subramaniyan*, A. Brodsky, I.C. Garretson*, **K.R. Haapala,** D. Libes, K.C. Morris, R. Pan, V. Prabhu, A. Sarkar*, A. Shankar Raman*, and Zhenhua Wu, 2018, "Research Directions for an Open Unit Manufacturing Process Repository: A Collaborative Vision," *Manufacturing Letters,* Vol. 15, Part B, pp. 71-75, DOI: 10.1016/j.mfglet.2017.12.007. (Contributing author)
35. Psenka, C.E.†, K.-Y. Kim, G.E. Okudan Kremer, **K.R. Haapala**, and K.L. Jackson, 2017, "Translating Constructionist Learning to Engineering Design Education," *Journal of Integrated*

Design and Process Science, Vol. 21, No. 2, pp. 3-20, DOI: 10.3233/jid-2017-0004. (Contributing author)

36. Mirkouei, A.*†, **K.R. Haapala,** J. Sessions, and G.S. Murthy, 2017, "An Evolutionary Multi-criteria Decision Making Framework for Enhancing Sustainability Performance across Mixed Biomass-based Energy Supply Chains," *Applied Energy*, Vol. 206, pp. 1088-1101, DOI: 10.1016/j.apenergy.2017.09.001. (Advisor of Ph.D. student author)
37. Mirkouei, A.*†, **K.R. Haapala**, J. Sessions, and G.S. Murthy, 2017, "A Review and Future Directions in Techno-Economic Modeling and Optimization of Upstream Forest Biomass to Bio-oil Supply Chains," *Renewable and Sustainable Energy Reviews*, Vol. 67, pp. 15-35, DOI: 10.1016/j.rser.2016.08.053. (Advisor of Ph.D. student author)
38. Garretson, I.C.*, M. Mani, S. Leong, K.W. Lyons, **K.R. Haapala**†, 2016, "Terminology to Support Manufacturing Process Characterization and Assessment for Sustainable Production," *Journal of Cleaner Production*, Vol. 139, pp. 986–1000, DOI: 10.1016/j.jclepro.2016.08.103. (Advisor of M.S. student author)
39. Alsaffar, A.J.*, K. Raoufi*, K.Y. Kim, G.E.O. Kremer, **K.R. Haapala**†, 2016, "Simultaneous Consideration of Unit Manufacturing Processes and Supply Chain Activities for Reduction of Product Environmental and Social Impacts," *ASME Journal of Manufacturing Science and Engineering*, Vol. 138, No. 10, 101009 (18 pages), DOI: 10.1115/1.4034481. (Advisor of M.S. and Ph.D. student authors)
40. Nagarajan, H.P.N*, H.A. Malshe*, **K.R. Haapala**†, and Y. Pan, 2016 "Environmental Performance Evaluation of a Fast Mask Image Projection Stereolithography Process through Time and Energy Modeling," *ASME Journal of Manufacturing Science and Engineering*, Vol. 138, No. 10, 101004 (10 pages), DOI: 10.1115/1.4033756. (Advisor of M.S. student authors)
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42. Gao, Q.*, J. Lizarazo-Adarme, B.K. Paul, and **K.R. Haapala**†, 2016, "An Economic and Environmental Assessment Model for Microchannel Device Manufacturing: Part 1 – Methodology," *Journal of Cleaner Production,* Vol. 120, pp. 135-145, http://dx.doi.org/10.1016/j.jclepro.2015.04.142. (Advisor of M.S. student author)
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44. Kremer, G., **K. Haapala**, A. Murat, R.B. Chinnam†, K.-Y. Kim, L. Monplaisir, and T. Lei*, 2016, "Directions for Instilling Economic and Environmental Sustainability across Product Supply Chains," *Journal of Cleaner Production*, Vol. 112, Part 3, pp. 2066-2078, http://dx.doi.org/10.1016/j.jclepro.2015.07.076. (Contributing author)
45. Eastwood, M.D.* and **K.R. Haapala**†, 2015, "Unit Process Model Based Methodology to Assist Product Sustainability Assessment during Design for Manufacturing," *Journal of Cleaner*

Production, Vol. 108, Part A, pp. 54-64, http://dx.doi.org/10.1016/j.jclepro.2015.08.105. (Advisor of M.S. student author)

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47. Zhang, H.*, **K.R. Haapala**†, and J. Calvo-Amodio, 2015, "Establishing Foundational Concepts for Sustainable Manufacturing Systems Assessment," *International Journal of Strategic Engineering Asset Management,* Vol. 2, No. 3, pp. 249-269, http://dx.doi.org/10.1504/IJSEAM.2015.072124. (Co-advisor of Ph.D. student author)
48. Zhang, H.* and **K.R. Haapala**†, 2015, "Integrating Sustainable Manufacturing Assessment into Decision Making for a Production Work Cell," *Journal of Cleaner Production*, Vol. 105, October, pp. 52-63, http://dx.doi.org/10.1016/j.jclepro.2014.01.038. (Advisor of M.S. student author)
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51. **Haapala, K.R.**† and P. Prempreeda*, 2014, "Environmental Impacts of Integrating Wind Energy Systems and Supplemental Energy Generation and Storage Systems," *International Journal of Sustainable Manufacturing,* Vol. 3, No. 2, pp. 186-206, DOI: 10.1504/IJSM.2014.062497. (Advisor of M.S. student author)
52. **Haapala, K.R.**† and P. Prempreeda*, 2014, "Comparative Life Cycle Assessment of 2.0 MW Wind Turbines," *International Journal of Sustainable Manufacturing,* Vol. 3, No. 2, pp. 170-185, DOI: 10.1504/IJSM.2014.062496. (Advisor of M.S. student author)
53. Niyaghi, F.*, **K.R. Haapala**†, S.L. Harper, and M.C. Weismiller, 2014, "Stability and Biological Responses of Zinc Oxide Metalworking Nanofluids (ZnO MWnF™)," *Tribology Transactions*, Vol. 57, No. 4, pp. 730-739, DOI: 10.1080/10402004.2014.906695. (Advisor of M.S. student author; primary responsibility for paper editing with technical support of collaborators)
54. Zhang, H.*, J. Calvo-Amodio, and **K.R. Haapala**†, 2013, "A Conceptual Model for Assisting Sustainable Manufacturing Enterprise through System Dynamics," *SME Journal of Manufacturing Systems*, Vol. 32, No. 4, pp. 543-549, DOI: 10.1016/j.jmsy.2013.05.007. (co-advisor of lead author/PhD student; **one of seven fast-tracked** SME NAMRC 41 conference papers to JMS; Top 10 Downloaded JMS Article in the last 90 days, Oct. 2013-June 2014)
55. **Haapala, K.R.**†, F. Zhao, J. Camelio, J.W. Sutherland, S.J. Skerlos, D.A. Dornfeld, I.S. Jawahir, A.F. Clarens, J.L. Rickli*, 2013, "A Review of Engineering Research in Sustainable Manufacturing," *ASME Journal of Manufacturing Science and Engineering*, Vol. 135, No. 4,

041013 (16 pp.), DOI: 10.1115/1.4024040. (lead author along with several key researchers in the community)

56. Bozorgirad, M.A.*, H. Zhang*, **K.R. Haapala†**, and G.S. Murthy, 2013, "Environmental Impact and Cost Assessment of Incineration and Ethanol Production as Municipal Solid Waste Management Strategies," *The International Journal of Life Cycle Assessment,* Vol. 18, No. 8, pp. 1502-1512, DOI: 10.1007/s11367-013-0587-z. (main advisor of course-related project that was expanded beyond the typical scope, first two authors were Ph.D. students in the course – Zhang was a Ph.D. advisee)
57. Kim, K.Y.†, **K.R. Haapala**, G.E. Okudan Kremer, and M.K. Barbour, 2012, "Cyber Collaboratory-based Sustainable Design Education: A Pedagogical Framework," *Journal of Computational Science and Education*, Vol. 3, No. 2, pp. 2-10, DOI: 10.22369/issn.2153-4136/3/2/1. (contributing author of work based on collaborative NSF project)
58. **Haapala, K.R.**†, A.V. Catalina, M.L. Johnson, J.W. Sutherland, 2012, "Development and Application of Models for Steelmaking and Casting Environmental Performance," *ASME Journal of Manufacturing Science and Engineering*, Vol. 134, No. 5, 051013 (13 pp.), DOI: 10.1115/1.4007463. (lead author of work conducted under PhD research with industry mentors and PhD advisor)
59. Bohm, M. R.†, **K. R. Haapala**, K. Poppa*, A. Nix*, R. B. Stone, I. Y. Tumer, 2010, "Integrating Life Cycle Assessment into the Conceptual Phase of Design Using a Design Repository," *Journal of Mechanical Design*, Vol. 132, No. 9, 091005 (12 pp.), DOI: 10.1115/1.4002152. (lead author with postdoc M. Bohm; conducted LCA work)
60. Sutherland, J. W., T. L. Jenkins*, and **K. R. Haapala**†, 2010, "Development of a Cost Model and its Application in Determining Optimal Size of a Diesel Engine Remanufacturing Facility," *CIRP Annals - Manufacturing Technology*, Vol. 59, No. 1, pp. 49-52, DOI: 10.1016/j.cirp.2010.03.050. (contributing author)
61. Sutherland, J. W.†, D. P. Adler*, **K. R. Haapala***, and V. Kumar*, 2008, "A Comparison of Manufacturing and Remanufacturing Energy Intensities with Application to Diesel Engine Production," *CIRP Annals - Manufacturing Technology*, Vol. 57, No. 1, pp. 5-8, DOI: 10.1016/j.cirp.2008.03.004. (contributing author)
62. **Haapala, K. R.***, J. L. Rivera*, and J. W. Sutherland†, 2008, "Application of Life Cycle Assessment Tools to Sustainable Product Design and Manufacturing," *International Journal of Innovative Computing, Information and Control*, Vol. 4, No. 3, pp. 577-591. (primary author, based on Ph.D. research)
63. Sutherland, J. W.† and **K. R. Haapala***, 2007, "Optimization of Steel Production to Improve Lifecycle Environmental Performance," *CIRP Annals - Manufacturing Technology*, Vol. 56, No. 1, pp. 5-8, DOI: 10.1016/j.cirp.2007.05.003. (primary author, based on Ph.D. research)
64. Kumar, V.*, **K. R. Haapala***, J. L. Rivera*, M. J. Hutchins*, W. J. Endres, J. K. Gershenson, D. J. Michalek, and J. W. Sutherland†, 2005, "Infusing Sustainability Principles into Manufacturing/ Mechanical Engineering Curricula," *SME Journal of Manufacturing Systems*, Vol. 24, No. 3, pp. 215-225, DOI: 10.1016/S0278-6125(06)80011-7. (contributing author)
65. Haapala, K.**, Thul, A.**, Andrasko, S.**, Muehlfield, C.**, Bloss, B.*, Nesbitt, R.*, & Beard, J.E., 2002, "Design and Development of the 2001 Michigan Tech FutureTruck, a Power-

Split Hybrid Electric Vehicle," *SAE Transactions*, Vol. 111, 2115–2132. http://www.jstor.org/stable/44743227. (contributing author, based on Capstone Project)

C1.3. Peer-Reviewed Archival Conference Publications
(* Graduate Student; ** Undergraduate Student; † Corresponding Author)

In Review

1. Rafat, M.T. *†, Z. Fan, and **K.R. Haapala**, 2024, "Examining the Influence of Process Parameters on Surface Roughness in Incremental Sheet Forming: A Review," Proceedings of the ASME 2024 19th International Manufacturing Science and Engineering Conference (MSEC2024), June 17-June 21, 2024, Knoxville, TN, MSEC2024-125163, in review.
2. Riofrio, M.I.*†, Z. Fan, and **K.R. Haapala**, 2024, "A Methodology for Predicting the Production Cost of Parts Fabricated using Incremental Forming," Proceedings of the ASME 2024 19th International Manufacturing Science and Engineering Conference (MSEC2024), June 17-June 21, 2024, Knoxville, TN, MSEC2024-125564, in review.
3. Harfoush, A.*†, Z. Fan, L. Goddik, and **K.R. Haapala**, 2024, "A Review of Ice Cream Manufacturing Process and System Improvement Strategies," 52nd SME North American Manufacturing Research Conference (NAMRC 52), June 17-June 21, 2024, Knoxville, TN, in review.

Appeared or Accepted

1. Harfoush, A.*†, A. Tabei, and **K.R. Haapala**, I. Ghamarian, 2023, "A Framework for Predicting Grain Morphology during Incremental Sheet Metal Forming using Generative Adversarial Networks," 51st North American Manufacturing Research Conference, June 12-16, 2023. Appeared in *Manufacturing Letters*, Vol. 35, pp. 1081-1088, DOI: 10.1016/j.mfglet.2023.08.061. (co-advisor of Ph.D. student author, unknown acceptance rate)
2. Raghunath, N.*†, **K.R. Haapala**, and C. Sanchez, 2023, "Examining industry expectations for content knowledge in mechatronics across career and professional certificate programs," 51st North American Manufacturing Research Conference, June 12-16, 2023. Appeared in *Manufacturing Letters*, Vol. 35, pp. 1230-1235, DOI: 10.1016/j.mfglet.2023.08.061.
3. Liao, J.*, X. Huan, **K.R. Haapala**, and D.R. Cooper†, 2023, "A Bayesian Approach to Modeling Unit Manufacturing Process Environmental Impacts using Limited Data with Case Studies on Laser Powder Bed Fusion," *Procedia CIRP (30th CIRP Life Cycle Engineering Conference)*, Vol. 116, pp. 516-521, DOI: 10.1016/j.procir.2023.02.087. (collaborator, unknown acceptance rate)
4. Enarevba, D.R.*† and **K.R. Haapala**, 2023, "A Comparative Life Cycle Assessment of Expanded Polystyrene and Mycelium Packaging Box Inserts," *Procedia CIRP (30th CIRP Life Cycle Engineering Conference)*, Vol. 116, pp. 654-659, DOI: 10.1016/j.procir.2023.02.110. (advisor of Ph.D. student author, unknown acceptance rate)
5. Raghunath, N.*†, **K.R. Haapala**, and C. Sanchez, 2023, "Do I need to know this?: A comparison of mechatronics program offerings to industry expectations for necessary on-the-job skillsets," in Proceedings of the Annual Meeting for the American Society for Engineering Education, June 25-28, Baltimore, MD.

6. Thomas, M.W.*, L.N. Rubottom*, T.H. Shellhammer, **K.R. Haapala**, and B.M. Fronk†, 2023, "A Study of Hop Kilning Energy Consumption with Respect to Drying Temperatures in the Pacific Northwest," 8th Thermal and Fluids Engineering Conference (TFEC), pp. 57-60, DOI: 10.1615/TFEC2023.app.046323, March 26-29, College Park, MD. (co-advisor of M.S. student author, unknown acceptance rate)
7. Aksit, E.*†, A. Tabei, and **K.R. Haapala**, 2022, "A Deep Learning Method for Microstructure Prediction of Additively Manufactured Titanium Alloys," 31st International Conference on Flexible Automation and Intelligent Manufacturing, June 19-23, Detroit, MI. (co-advisor of Ph.D. student author, unknown acceptance rate)
8. Harfoush, A.*, **K.R. Haapala**, A. Tabei†, 2021, "Application of Artificial Intelligence in Incremental Sheet Metal Forming: A Review," *Procedia Manufacturing (49th North American Manufacturing Research Conference)*, Vol. 53, pp. 606-617, DOI: 10.1016/j.promfg.2021.06.061. (co-advisor of Ph.D. student author, unknown acceptance rate)
9. Nagarajan, H.P.N.†*, S. Panicker, H. Mokhtarian, E. Coatanéa, and **K.R. Haapala**, 2020, "Improving Worker Health and Safety in Wire Arc Additive Manufacturing: A Graph-based Approach," *Procedia CIRP (27th CIRP Life Cycle Engineering Conference)*, Vol. 90, pp. 461-466, DOI: 10.1016/j.procir.2020.01.116. (co-advisor of Nagarajan and Panicker, unknown acceptance rate)
10. Raoufi, K. †*, S. Manoharan*, T. Etheridge, B. Paul, and **K. Haapala**, 2020, "Cost and Environmental Impact Assessment of Stainless Steel Microreactor Plates using Binder Jetting and Metal Injection Molding Processes," *Procedia Manufacturing (48th North American Manufacturing Research Conference)*, Vol. 48, pp. 311-319, DOI: 10.1016/j.promfg.2020.05.052. (advisor of Ph.D. student lead author, unknown acceptance rate)
11. Shankar Raman, A.†*, D.S. Harper**, **K.R. Haapala**, B.S. Linke, W.Z. Bernstein, and K.C. Morris, 2019, "Challenges in Representing Manufacturing Processes for Systematic Sustainability Assessments – Workshop on June 21, 2018," *Proceedings of the ASME 2019 14th International Manufacturing Science and Engineering Conference (MSEC)*, June 10-14, Erie, PA, USA, V002T03A012 (9 pages), DOI: 10.1115/MSEC2019-3032. (advisor of the Ph.D. student author and mentor to undergraduate assistant, unknown acceptance rate)
12. Panicker, S.†*, H.P.N. Nagarajan*, H. Mokhtarian*, A. Hamedi*, A. Chakraborti*, E. Coatanea, **K.R. Haapala**, and K. Koskinen, 2019, "Tracing the Interrelationship between Key Performance Indicators and Production Cost using Bayesian Networks," *Procedia CIRP (52nd CIRP Conference on Manufacturing Systems)*, Vol. 81, pp. 500-505, DOI: 10.1016/j.procir.2019.03.136. (co-advisor of Nagarajan and Panicker, unknown acceptance rate)
13. Mokhtarian, H.†*, A. Hamedi*, H.P.N. Nagarajan*, S. Panicker*, E. Coatanea, and **K.R. Haapala**, 2019, "Probabilistic Modelling of Defects in Additive Manufacturing: A Case Study in Powder Bed Fusion," *Procedia CIRP (52nd CIRP Conference on Manufacturing Systems)*, Vol. 81, pp. 956-961, DOI: 10.1016/j.procir.2019.03.234. (co-advisor of Nagarajan and Panicker, unknown acceptance rate)
14. Raoufi, K.†*, C. Taylor, L. Laurin, and **K.R. Haapala**, 2019, "Visual Communication Methods and Tools for Sustainability Performance Assessment: Linking Academic and Industry Perspectives," *Procedia CIRP (26th CIRP Life Cycle Engineering (LCE) Conference)*, Vol. 80,

pp. 215-220, DOI: 10.1016/j.procir.2019.01.087. (advisor of the Ph.D. student author, unknown acceptance rate)

15. Manoharan, S. †* and **K.R. Haapala**, 2019, "A Grey Box Software Framework for Sustainability Assessment of Composed Manufacturing Processes: A Hybrid Manufacturing Case," *Procedia CIRP (26th CIRP Life Cycle Engineering (LCE) Conference)*, Vol. 80, pp. 440-445, DOI: 10.1016/j.procir.2019.01.088. (advisor of the M.S. student author, unknown acceptance rate)
16. Lobov, A.†, and K.R. Haapala, 2019, "Towards Sustainable Manufacturing by Extending Manufacturing Execution System Functions," *Proceedings of the 20th International Conference on Industrial Technology (IEEE-ICIT 2019)*, February 13-15, 2019, Melbourne, Australia, pp. 1329-1335. DOI: 10.1109/ICIT.2019.8755102. (contributing author)
17. Chan, R.*†, **K.R. Haapala**, M.I. Campbell, 2018, "Assessing Component Machinability using Voxelized Solid Models," *Proceedings of the ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, August 26-29, 2018, Quebec City, Quebec, Canada, V004T05A005 (8 pages), DOI: 10.1115/DETC2018-86022. (advisor of the M.S. student author, unknown acceptance rate)
18. Venkatesa Prasad, S. P.*, S. Desabathina*, J. David Porter†, Z. Fan, and **K. Haapala**, 2018, "Comparison between Artificial Neural Network and Random Forest Based Multi-Sensor Fusion for Predicting CBN Wheel Condition," *Proceedings of the International Symposium on Flexible Automation (ISFA 2018)*, July 15-19, 2018, Kanazawa, Japan, pp. 359-362, DOI: 10.11509/isfa.2018.359. (advisor of Desabathina, unknown acceptance rate)
19. Desabathina, S.*, X. Hu*, Z. Fan†, **K. Haapala**, and D. Porter, 2018, "Multi-Sensor Data Fusion for Specific Energy Estimation in the Grinding Process," *Proceedings of the International Symposium on Flexible Automation (ISFA 2018)*, July 15-19, Kanazawa, Japan, pp. 325-328, DOI: 10.11509/isfa.2018.325. (co-advisor of Desabathina, unknown acceptance rate)
20. Karki, S.*, **K.R. Haapala**, B.M. Fronk†, 2018, "Thermal Performance Evaluation of a Residential Solar/Gas Hybrid Water Heating System," *Proceedings of the 5th International High Performance Buildings Conference at Purdue*, July 9-12, 2018, West Lafayette, IN, pp. 3122 (1-10), https://docs.lib.purdue.edu/ihpbc/251/. (co-advisor of the M.S. student author, unknown acceptance rate)
21. Shankar Raman, A.*†, **K.R. Haapala**, KC Morris, 2018, "Demonstrating a Standard Methodology for Sustainable Manufacturing Process Characterization," *Proceedings of the ASME 2018 International Manufacturing Science and Engineering Conference (MSEC)*, June 18-22, 2018, College Station, Texas, USA, V001T05A024 (10 pages), DOI: 10.1115/MSEC2018-6707. (advisor of the Ph.D. student author, unknown acceptance rate)
22. Raoufi, K.*†, A. Shankar Raman*, **K.R. Haapala**, B.K. Paul, 2018, "Benchmarking Undergraduate Manufacturing Engineering Curricula in the United States," *Procedia Manufacturing (46th SME NAMRC)*, Vol. 26, pp. 1378-1387, DOI: 10.1016/j.promfg.2018.07.114. (advisor of the Ph.D. student authors, unknown acceptance rate)
23. Nagarajan, H. P. N. †*, A. Shankar Raman*, and **K.R. Haapala**, 2018, "A Sustainability Assessment Framework for Dynamic Cloud-based Distributed Manufacturing," *Procedia*

Manufacturing (25th CIRP LCE), Vol. 69, pp. 136-141, DOI: 10.1016/j.procir.2017.11.120. (advisor of the M.S. and Ph.D. student authors, unknown acceptance rate)

24. Chan, R.*†, S. Manoharam*, and **K.R. Haapala**, 2017, "Comparing the Sustainability Performance of Metal-Based Additive Manufacturing Processes," *Proceedings of the 2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA, V004T05A039 (9 pages), DOI: 10.1115/DETC2017-68262. (advisor of the M.S. student authors, unknown acceptance rate)
25. Raoufi, K. *†, **K.R. Haapala**, G.E. Okudan Kremer, K.-Y. Kim, C.E. Psenka, K.L. Jackson, 2017, "Enabling Cyber-Based Learning of Product Sustainability Assessment using Unit Manufacturing Process Analysis," *Proceedings of the 2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA. V004T05A038 (10 pages), DOI: 10.1115/DETC2017-68249. (advisor of the Ph.D. student author, unknown acceptance rate)
26. Ferrero, V.J. *, A. Shankar Raman*, B. DuPont†, and **K.R. Haapala**, 2017, "Understanding the Sustainability of Eco-Labeled Products when Compared to Conventional Alternatives," *Proceedings of the 2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA, V004T05A045 (10 pages), DOI: 10.1115/DETC2017-68339. (advisor of Shankar Raman, paper based on extension of course project, unknown acceptance rate)
27. Tong, A.†*, J. Calvo-Amodio, and **K.R. Haapala**, 2017, "Integration of Sustainability Indicators and the Viable System Model toward a Systemic Sustainability Assessment Methodology," *Proceedings of the 61st Annual Meeting of the ISSS - 2017*, July 9-14, Vienna, Austria, 17 pp., https://journals.isss.org/index.php/proceedings61st/article/view/3131. (co-advisor of the Ph.D. student author, unknown acceptance rate)
28. Raoufi, K. *†, **K.R. Haapala**, K.L. Jackson, K.Y. Kim, G.E. Okudan Kremer, and C.E. Psenka, 2017, "Enabling Non-Expert Sustainable Manufacturing Process and Supply Chain Analysis during the Early Product Design Phase," *Procedia Manufacturing (45th SME NAMRC)*, Vol. 10, pp. 1097-1108, DOI: 10.1016/j.promfg.2017.07.100. (advisor of the Ph.D. student authors, unknown acceptance rate)
29. Smullin, M.M. *† and **K.R. Haapala**, 2017, "A Desktop Application for Sustainability Performance Assessment of Composed Unit-Based Manufacturing Systems," *Proceedings of the ASME 2017 International Manufacturing Science and Engineering Conference (MSEC)*, June 4-8, Los Angeles, California, USA, V004T05A022 (11 pages), DOI: 10.1115/MSEC2017-3051. (advisor of the M.S. student author, unknown acceptance rate)
30. Nagarajan, H.P.N. *† and **K.R. Haapala**, 2017, "Environmental Performance Evaluation of Direct Metal Laser Sintering through Exergy Analysis," *Procedia Manufacturing (45th SME NAMRC)*, Vol. 10, pp. 957-967, DOI: 10.1016/j.promfg.2017.07.087. (advisor of the M.S. student author, unknown acceptance rate)
31. Khan, M.T.H. *†, C.E. Psenka, K.L. Jackson, **K.R. Haapala**, G.E. Okudan Kremer, K.Y. Kim, T. Reza*, K. Park*, K. Raoufi*, 2017, "Development of Learning Modules for Sustainable Life Cycle Product Design: A Constructionist Approach," *Proceedings of the 2017 ASEE Annual Conference & Exposition*, Paper 19011, June 25-28, Columbus, OH, 12 pp., DOI: 10.18260/1-2--28174. (advisor of Raoufi, unknown acceptance rate)

32. Mirkouei, A.*†, **K.R. Haapala**, G.S. Murthy, and J. Sessions, 2016, "Reducing Greenhouse Gas Emissions for Sustainable Bio-Oil Production Using a Mixed Supply Chain," *Proceedings of the 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 21-24, Charlotte, North Carolina, USA. pp. V004T05A031 (10 pages), DOI: 10.1115/DETC2016-59262. (advisor of the Ph.D. student authors, unknown acceptance rate)

33. Smullin, M.*†, **K.R. Haapala,** M. Mani, and K.C. Morris, 2016, "Using Industry Focus Groups and Literature Review to Identify Challenges in Sustainable Assessment Theory and Practice," *Proceedings of the 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Lifecycle Conference (DFMLC)*, Paper DETC2016-60216, August 21-24, Charlotte, North Carolina, USA. pp. V004T05A048 (10 pages), DOI: 10.1115/DETC2016-60216. (advisor of the M.S. student author, unknown acceptance rate, **received 2016 DFMLC Best Paper Award**)

34. Doran, M.*†, M. Smullin*, and **K.R. Haapala**, 2016, "An Approach to Compare Sustainability Performance of Additive and Subtractive Manufacturing during Process Planning," *Proceedings of the 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 21-24, Charlotte, North Carolina, USA, pp. V004T05A047, (10 pages), DOI: 10.1115/DETC2016-60209. (advisor of the M.S. student authors, unknown acceptance rate)

35. Smullin, M.M.*†, I.C. Garretson*, **K.R. Haapala**, 2016, "Composability of Unit Manufacturing Process Models for Manufacturing Systems Analysis," *Proceedings of the ASME 2016 International Manufacturing Science and Engineering Conference (MSEC)*, June 27-July 1, Blacksburg, Virginia, USA, V003T08A024 (11 pages), DOI: 10.1115/MSEC2016-8804. (advisor of the M.S. student authors, unknown acceptance rate)

36. Mirkouei, A.*†, R. Bhinge*, C. McCoy, **K. R. Haapala**, and D. A. Dornfeld, 2016, "A Pedagogical Module Framework to Improve Scaffolded Active Learning in Manufacturing Engineering Education," *Procedia Manufacturing (44th SME NAMRC)*, Vol. 5, pp. 1128-1142, DOI: 10.1016/j.promfg.2016.08.088. (advisor of the Ph.D. student author, unknown acceptance rate)

37. Mirkouei, A.*†, **K.R. Haapala**, G.S. Murthy, and J. Sessions, 2016, "Evolutionary Optimization of Bioenergy Supply Chain Cost with Uncertain Forest Biomass Quality and Availability," *Proceedings of the IIE/ISERC*, May 21-24, Anaheim, California, USA, pp. 601-606. (advisor of the Ph.D. student author, unknown acceptance rate)

38. Tong, A.*, J. Calvo-Amodio†, **K. Haapala**, 2015, "A Dynamic Model of Job Satisfaction and Turnover: Framework for Model Development and Simulation," *Proceedings of the American Society for Engineering Management 2015 International Annual Conference*, Indianapolis, Indiana, USA, October 7-10, pp. 327-335, ISBN: 978-1-5108-1602-2. (co-advisor of the Ph.D. student author, 85% acceptance rate, **received Anatole Rapaport Best Paper Award**)

39. Tong, A.*, A. Veltri, E. Ng†, J. Calvo-Amodio, **K. Haapala**, 2015, "Safety: Let's Start at the Beginning," *Proceedings of the American Society for Engineering Management 2015 International Annual Conference*, Indianapolis, Indiana, USA, October 7-10, pp. 388-394, ISBN: 978-1-5108-1602-2. (co-advisor of the Ph.D. student author, unknown acceptance rate)

40. Nagarajan, H.P.N.*† and **K.R. Haapala**, 2015, "Application of Sustainability Assessment to a Novel Plastic Recycling Process," *Proceedings of the 2015 ASME IDETC/CIE: 20th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 2-5, Boston, Massachusetts,

USA, V004T05A008 (7 pages), DOI: 10.1115/DETC2015-47937. (advisor of the M.S. student author, unknown acceptance rate)

41. Garretson, I.*†, M.D. Carter, A.E. Simmons, K.W. Lyons, M. Mani, S. Leong, and **K.R. Haapala**, 2015, "Unit Manufacturing Process Models for Ferromagnetic and Non-Ferromagnetic Alloy Surface Inspection Methods," *Proceedings of the 2015 ASME IDETC/CIE: 20th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 2-5, Boston, Massachusetts, USA, V004T05A044 (10 pages), DOI: 10.1115/DETC2015-46765. (advisor of the M.S. student author, unknown acceptance rate, **received 2015 DFMLC Best Paper Award**)
42. Psenka, C.E., K.L. Jackson, K.-Y. Kim, and **K.R. Haapala**, 2015, "Constructionist Learning for Environmentally Responsible Product Design," ASEE Annual Conference and Exposition, June 14-17, Seattle, WA, pp. 26.398.1 - 26.398.13, DOI: 10.18260/p.23737. (contributing author)
43. Mirkouei, A.*† and **K.R. Haapala**, 2015, "A Network Model to Optimize Upstream and Midstream Biomass-to-Bioenergy Supply Chain Costs," *Proceedings of the ASME 2015 International Manufacturing Science and Engineering Conference (MSEC)*, June 8-12, Charlotte, NC, V002T05A011 (11 pages), DOI: 10.1115/MSEC2015-9355. (advisor of the Ph.D. student author, unknown acceptance rate)
44. Malshe, H.*†, H. Nagarajan*, Y. Pan, and **K.R. Haapala**, 2015, "Profile of Sustainability in Additive Manufacturing and Environmental Assessment of a Novel Stereolithography Process," *Proceedings of the ASME 2015 International Manufacturing Science and Engineering Conference (MSEC)*, June 8-12, Charlotte, NC, V002T05A012 (11 pages), DOI: 10.1115/MSEC2015-9371. (advisor of the M.S. student authors, unknown acceptance rate)
45. Lajevardi, B.*†, I.C. Garretson*, B.K. Paul, and **K.R. Haapala**, 2015, "Manufacturing Energy Analysis of a Microchannel Heat Exchanger for High-Density Servers," *Procedia Manufacturing (43rd SME NAMRC)*, Vol. 1, pp. 792-803, DOI: 10.1016/j.promfg.2015.09.064. (advisor of the Ph.D. and M.S. student authors, unknown acceptance rate)
46. Anderson, J.*, I.C., Garretson*†, **K.R. Haapala**, 2014, "Gate-To-Gate Sustainability Assessment for Small-Scale Manufacturing Businesses: Caddisfly Jewelry Production," *Proceedings of the 2014 ASME IDETC/CIE: 19th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 17-20, Buffalo, NY. DOI: 10.1115/DETC2014-34559. (advisor of one M.S. student author, based on course project by both students, 85% acceptance rate)
47. Garretson, I.*†, C. Eastwood**, M. Eastwood*, **K.R. Haapala**, 2014, "A Software Tool for Unit Process-Based Sustainable Manufacturing Assessment of Metal Components," *Proceedings of the 2014 ASME IDETC/CIE: 19th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 17-20, Buffalo, NY, V004T06A042 (9 pages), DOI: 10.1115/DETC2014-34557. (advisor of M.S. student authors and mentor of the undergraduate student author, 85% acceptance rate)
48. Girod, O.J.**, H. Zhang*, J. Calvo-Amodio†, **K. R. Haapala**, and J. B. Mason, 2014, "A Proposed Hybrid-Dynamic Transition Phase for High Mix Low Volume Manufacturers," *Proceedings of the IIE/ISERC*, Paper I0969, May 31-June 3, Montreal, Quebec, Canada. (co-advisor of B.S. honors student and Ph.D. student authors, unknown acceptance rate)
49. Cimino-Hurt, A.*† and **K. R. Haapala**, 2014, "A Framework for Assessing Environmental and Operational Performance of New Manufacturing Process Technology," *Proceedings of the*

IIE/ISERC, Paper I1095, May 31-June 3, Montreal, Quebec, Canada. (advisor of the M.S. student author, unknown acceptance rate)

50. Lajevardi, B.*†, **K. R. Haapala**, and J.F. Junker, 2014, "An Energy Efficiency Metric for Data Center Assessment," *Proceedings of the IIE/ISERC*, Paper I657, May 31-June 3, Montreal, Quebec, Canada. (advisor of the Ph.D. student author, unknown acceptance rate)
51. Mirkouei, A.*† and **K.R. Haapala**, 2014, "Integration of Machine-Learning and Mathematical Programming Methods into the Biomass Feedstock Supplier Selection Process," *24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM)*, May 20-23, San Antonio, TX, pp. 443-450, DOI: 10.14809/faim.2014.0443. (advisor of Ph.D. student author, unknown acceptance rate)
52. Zhang, H. *, F. J. Calvo-Amodio†, and **K.R. Haapala**, 2013, "A Systems Thinking Approach for Modeling Sustainable Manufacturing Problems in Enterprises," *American Society for Engineering Management 2013 International Annual Conference*, October 2-5, Minneapolis, MN, 11 pp. (co-advisor of Ph.D. student author, 65% acceptance rate in track, 75% overall)
53. Eastwood, M.D. *†, **K.R. Haapala**, M.D. Carter, P. Liner, 2013, "Product and Process Design for Sustainable Assembly," *Proceedings of the 2013 ASME IMECE (International Mechanical Engineering Conference and Exposition*, November 15-21, San Diego, CA, V012T13A040a (8 pages), DOI: 10.1115/IMECE2013-63272. (advisor of M.S. student author, industry co-authors provided technical input, unknown acceptance rate)
54. Piacenza, J. *†, S.H. Seyedmahmoudi*, **K.R. Haapala**, I. Tumer, C. Hoyle, 2013, "Comparison of Sustainability Performance for Cross Laminated Timber and Concrete," *Proceedings of the 2013 ASME IDETC/CIE: 18th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 4-7, Portland, OR, V004T05A036 (11 pages), DOI: 10.1115/DETC2013-12267. (Advisor of M.S. student second author; paper was extension of class project; 98% acceptance rate)
55. Gilchrist, B. *†, D. Van Bossuyt, R. Arlitt, **K.R. Haapala**, I. Tumer, R. Stone, 2013, "Functional Impact Comparison of Common and Innovative Products," *Proceedings of the 2013 ASME IDETC/CIE: 18th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 4-7, Portland, OR, V004T05A037 (11 pages), DOI: 10.1115/DETC2013-12599. (contributing author, advised on environmental impact analysis, 98% acceptance rate)
56. Philip, N.*, G. Okudan†, **K.R. Haapala**, K.-Y. Kim, 2013, "A Comparison of Modularity Methods for their Implications on Sustainability," *Proceedings of the IIE Annual Conference and Expo 2013 (ISERC 2013)*, May 18-22, San Juan, Puerto Rico. (contributing author, unknown acceptance rate)
57. Gilchrist, B.P.*†, I.Y. Tumer, R.B. Stone, Q. Gao*, and **K. R. Haapala**, 2012, "Comparison of Environmental Impacts of Innovative and Common Products," *Proceedings of the 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 12-15, Chicago, IL, pp. 825-834, DOI: 10.1115/DETC2012-70559. (primary mentor to two-student team, one M.S. an advisee, paper based on extension of class project, 88% acceptance rate)
58. Philip, N.*†, G.E. Okudan, **K. R. Haapala**, and K.-Y. Kim, 2012, "Computer-aided Generation of Modular Designs Considering Component End-of-Life Options: Implications for the Supply Chain," *Proceedings of the 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the*

Lifecycle Conference (DFMLC), August 12-15, Chicago, IL, pp. 529-539, DOI: 10.1115/DETC2012-71180. (contributing author, 88% acceptance rate)

59. Eastlick, D.D.*† and **K. R. Haapala**, 2012, "Increasing the Utility of Sustainability Assessment in Product Design," *Proceedings of the 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 12-15, Chicago, IL, pp. 713-722, DOI: 10.1115/DETC2012-71144. (advisor of M.S. student thesis work, 88% acceptance rate)
60. Alsaffar, A.J.*†, **K.R. Haapala**, K.-Y. Kim, and G.E. Okudan Kremer, 2012, "A Process-Based Approach for Cradle-to-Gate Energy and Carbon Footprint Reduction in Product Design," *Proceedings of the 2012 ASME International Manufacturing Science & Engineering Conference (MSEC)*, pp. 1141-1150, June 4-8, Notre Dame, IN, DOI: 10.1115/MSEC2012-7405. (advisor of the M.S. student author; initiated ideas and contributed to authorship; unknown acceptance rate)
61. Lee, W.-T.*†, **K.R. Haapala**, M.E. Edwards, and K.H. Funk II, 2012, "A Framework for the Evaluation and Redesign of Human Work Based on Societal Factors," *Leveraging Technology for a Sustainable World: Proceedings of the 19th CIRP Conference on Life Cycle Engineering*, Berkeley, CA, May 23-25, D.A. Dornfeld and B.S. Linke, eds., Springer, pp. 575-580, DOI: 10.1007/978-3-642-29069-5_97 (contributing author; framing of initial work; 74% acceptance rate)
62. Zhang, H.*† and **K. R. Haapala**, 2012, "Integrating Sustainability Assessment into Manufacturing Decision Making," *Leveraging Technology for a Sustainable World: Proceedings of the 19th CIRP Conference on Life Cycle Engineering*, Berkeley, CA, May 23-25, D.A. Dornfeld and B.S. Linke, eds., Springer, pp. 551-556, DOI: 10.1007/978-3-642-29069-5_93 (advisor of M.S. student author; initiated ideas and contributed to authorship; 74% acceptance rate; **received 2012 CIRP LEO Best Paper Award**)
63. Eastlick, D. D.*†, M. V. Sahakian*, and **K. R. Haapala**, 2011, "Sustainable Manufacturing Analysis for Titanium Components," *Proceedings of the 2011 ASME IDETC/CIE: 16th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 28-31, Washington, D.C., pp. 711-719, DOI: 10.1115/DETC2011-48854 (advisor of M.S. student thesis work, 88% acceptance rate)
64. Kim, K.-Y.†, **K. R. Haapala**, G. E. Okudan Kremer, E. A. Murat, R. B. Chinnam, and L. F. Monplaisir, 2011, "A Conceptual Framework for a Sustainable Product Development Collaboratory to Support Integrated Sustainable Design and Manufacturing," *Proceedings of the 2011 ASME IDETC/CIE: 16th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 28-31, Washington, D.C., pp. 1097-1103, DOI: 10.1115/DETC2011-48922. (contributing author and presenter; 83% acceptance rate)
65. Zhang, H.*, **Haapala, K. R.**†, M. E. Vanlue**, and K. H. Funk II, 2011, "Environmental Impact and Cost Assessment of Product Service Systems using IDEF0 Modeling," *Transactions of the NAMRI/SME*, Vol. 39, pp. 172-181, June 13-17, Corvallis, OR. (advisor of B.S. and M.S. student authors; initiated paper topic and ideas, as well as authorship; 82% acceptance rate)
66. **Haapala, K.R.**†, F. Zhao, J. Camelio, J.W. Sutherland, S.J. Skerlos, D.A. Dornfeld, I.S. Jawahir, H.C. Zhang, and A.F. Clarens, 2011, "A Review of Engineering Research in Sustainable Manufacturing," *Proceedings of the 2011 ASME International Manufacturing*

Science & Engineering Conference (MSEC), pp. 599-619, June 13-17, Corvallis, OR, DOI: 10.1115/MSEC2011-50300. (lead author as chair of the Life Cycle Engineering Technical Committee (LCE TC) for contributors from the ASME Manufacturing Engineering Division as LCE TC as the 2011 MED State-of-the-Art Review Paper; unknown acceptance rate)

67. Alsaffar, A.J.* †, **K. R. Haapala**, and Z. Wu, 2011, "Consideration of Manufacturing Processes and the Supply Chain in Product Design," *Proceedings of the 2011 ASME International Manufacturing Science & Engineering Conference (MSEC)*, June 13-17, Corvallis, OR, pp. 163-171, DOI: 10.1115/MSEC2011-50232. (advisor of Alsaffar; worked closely on study and authorship; unknown acceptance rate)
68. Sahakian, M.V.*†, Brown, M.O.*, S.V. Atre, and **K. R. Haapala**, 2011, "Environmental and Cost Assessment of Several Injection Molded Materials," *Proceedings of the 2011 ASME International Manufacturing Science & Engineering Conference (MSEC)*, June 13-17, Corvallis, OR, pp. 569-575, DOI: 10.1115/MSEC2011-50057. (major advisor of Sahakian and Brown; worked closely on study and authorship; unknown acceptance rate)
69. Olson, E.*†, G. Okudan, M.-C. Chiu, **K. R. Haapala**, 2011, "Positioning Product Architecture as the Driver for Carbon Footprint & Efficiency Trade-offs in A Global Supply Chain," *International Conference on Industrial Engineering and Systems Management (IESM 2011)*, May 25 - 27, 2011, Metz, France. (contributing author; unknown acceptance rate)
70. Brown, M. O.* †, **K.R. Haapala**, R. T. Eluri*, B. K. Paul, S. D. Leith, and D. A. King, 2011, "Environmental Impacts of Microchannel Air Preheater Manufacturing under Different Scenarios*," Proceedings of the IIE Annual Conference and Expo 2011 (IERC 2011)*, May 21-25, Reno, NV. (advisor of student lead author; unknown acceptance rate)
71. Olson, E.C.*, **K.R. Haapala**†, G.E. Okudan, 2011, "Integration of Sustainability Issues during Early Design Stages in a Global Supply Chain Context," *AAAI 2011 Spring Symposium: Artificial Intelligence and Sustainable Design*, Association for the Advancement of Artificial Intelligence, March 21-23, Stanford University, Stanford, CA, Paper SS11-02-016, pp. 84-90. (corresponding author/presenter; student-led (Olson) authorship; unknown acceptance rate)
72. **Haapala, K.R.**†, K. Poppa*, R. B. Stone, and I. Y. Tumer, 2011, "Automating Environmental Impact Assessment during the Conceptual Phase of Product Design," *AAAI 2011 Spring Symposium: Artificial Intelligence and Sustainable Design*, Association for the Advancement of Artificial Intelligence, March 21-23, Stanford University, Stanford, CA, Paper SS11-02-011, pp. 53-59. (corresponding author; shared authorship with Poppa; unknown acceptance rate)
73. Brown, M.O.*, **K. R. Haapala**†, B. K. Paul, R. D. Glover*, and J. E. Hutchison, 2010, "Addressing Uncertainty in the Environmental Analysis of Nickel Nanoparticle Production," *Proceedings of the 2010 ASME International Manufacturing Science & Engineering Conference (MSEC)*, October 12-15, Erie, PA, pp. 439-446, DOI: 10.1115/MSEC2010-34251. (advisor of lead author; major contributor to study and authorship; unknown acceptance rate)
74. Bohm, M. R.†, **K. R. Haapala**, K. Poppa*, R. B. Stone, and I. Y. Tumer, 2010, "Environmental Analysis of Consumer Products During the Conceptual Phase of Product Design," *Proceedings of the 2010 ASME IDETC/CIE: 15th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, August 15-18, Montreal, Canada, pp. 351-363, DOI: 10.1115/DETC2010-28265. (shared lead authorship with Bohm; conducted LCA study; 82% acceptance rate)

75. Hapke, H.*, **K. R. Haapala**†, Z. Wu, T. K. A. Brekken, 2010, "Life Cycle Assessment of Modern Wind Power Plants," *Proceedings of the 2010 ASME IDETC/CIE: 15th Design for Manufacturing and the Lifecycle Conference (DFMLC)*, DETC2010-28749, August 15-18, Montreal, Canada, pp. 395-403, DOI: 10.1115/DETC2010-28749. (corresponding author; shared authorship with Hapke; 82% acceptance rate)

76. Chiu, M.-C.*, A. J. Alsaffar*, G. E. Okudan, and **K. R. Haapala**†, 2010, "Reducing Supply Chain Costs and Carbon Footprint during Product Design," *Proceedings of the 2010 IEEE International Symposium on Sustainable Systems and Technology*, May 16-19, Washington, DC, 6 pp., DOI: 10.1109/ISSST.2010.5507711. (corresponding author; shared main authorship with Chiu; 82% acceptance rate)

77. Lee, W.-T.*†, **K. R. Haapala**, and K. H. Funk II, 2010, "Defining the Dimensions of Human Work for Industrial Sustainability Assessment," *Proceedings of the 17th CIRP International Conference on Life Cycle Engineering (LCE2010)*, Hefei, China, May 19-21, pp. 384-389. (major contributor of ideas; student-led authorship; unknown acceptance rate)

78. Brown, M. O.* and **K. R. Haapala**†, 2010, "Challenges Facing Engineers in Evaluating Life Cycle Impacts of Emerging Technologies," *Proceedings of the 17th CIRP International Conference on Life Cycle Engineering (LCE2010)*, Hefei, China, May 19-21, pp. 17-22. (major advisor for student-led paper; unknown acceptance rate)

79. **Haapala, K. R.**†, S. K., Tiwari*, and B. K. Paul, 2009, "An Environmental Analysis of Nanoparticle-Assisted Diffusion Brazing," *Proceedings of the 2009 ASME International Manufacturing Science & Engineering Conference (MSEC)*, October 4-7, West Lafayette, IN, pp. 145-153, DOI: 10.1115/MSEC2009-84308. (primary author; unknown acceptance rate)

80. **Haapala, K. R.**†, J. L. Rivera*, and J. W. Sutherland, 2009, "Reducing Environmental Impacts of Steel Product Manufacturing," *Transactions of NAMRI/SME*, Vol. 37, pp. 419-426, 37th North American Manufacturing Research Conference, Clemson University, Greenville, SC. (primary author, based on Ph.D. research; unknown acceptance rate)

81. Rickli, J. R.*, A. R. Clarke*, **K. R. Haapala***, M. Addo*, J. A. Camelio, and J. W. Sutherland†, 2008, "Reducing the Environmental and Social Impacts of E-waste Recovery through Technology and Policy," *Proceedings of the Global Conf. on Sustainable Product Development and Life Cycle Engineering: Sustainability and Remanufacturing IV*, September 29-October 1, Busan, Korea, pp. 201-206. (led authorship with Rickli and Clarke; unknown acceptance rate)

82. Sutherland, J. W.†, J. L. Rivera*, K. L. Brown*, M. Law*, M. J. Hutchins*, T. L. Jenkins*, and **K. R. Haapala***, 2008, "Challenges for the Manufacturing Enterprise to Achieve Sustainable Development," *Manufacturing Systems and Technologies for the New Frontier: The 41st CIRP Conference on Manufacturing Systems*, Keynote Paper, May 26-28, Tokyo, Japan, M. Mitsuishi, K. Ueda, and F. Kimura, eds., Springer, London, pp. 15-18, DOI: 10.1007/978-1-84800-267-8_4. (contributing author; unknown acceptance rate)

83. **Haapala, K. R.***, K. L. Brown*, and J. W. Sutherland†, 2008, "A Life Cycle Environmental and Economic Comparison of Product-Service Systems," *Transactions of NAMRI/SME*, Vol. 36, p. 333-340, 36th North American Manufacturing Research Conference, Tecnológico de Monterrey, Monterrey, Mexico. (primary author, served as mentor to new graduate student on the work; unknown acceptance rate)

84. **Haapala, K. R.***†, M. J. Hutchins*, J. L. Rivera*, V. Kumar*, A. R. Clarke*, T. D. Eatmon*, R. A. Harris, M. H. Durfee, J. R. Mihelcic, D. R. Shonnard, and J. W. Sutherland, 2007, "Education, Research, and Training Aspects of the Sustainable Futures NSF IGERT Project," *Proceedings of the 2007 ASEE North Midwest Sectional Conf.*, September 20-22, Houghton, MI, DOI: 10.18260/1-2-620-36170. (primary author; unknown acceptance rate)

85. **Haapala, K. R.***, J. L. Rivera*, and J. W. Sutherland†, 2006, "Environmentally Responsible Process Selection via Life Cycle Analysis," *Proceedings of the 2006 International Symposium on Flexible Automation*, July 10-12, Osaka, Japan, on CD ROM. (primary author; unknown acceptance rate)

86. Tumkor, S.†, V. Kumar*, **K. R. Haapala***, and J. W. Sutherland, 2006, "New Engineering Design Concepts for Sustainable Products," *Proceedings of the ASEE Annual Conference*, June 18-21, Chicago, IL, pp. 11.955.1 - 11.955.13, DOI: 10.18260/1-2--758. (contributing author; unknown acceptance rate)

87. Ju, C.*, L. P. Keranen*, **K. R. Haapala***, D. J. Michalek, and J. W. Sutherland†, 2005, "Issues Associated with MQL Implementation: Effect on Peripheral Milling Process Performance and Impact on Machining Economics," *Proceedings of the 2005 ASME/IMECE*, November 5-11, Orlando, FL, pp. 3-12, DOI: 10.1115/IMECE2005-79259. (assisted with manuscript preparation; unknown acceptance rate)

88. Kumar, V.*, **K. R. Haapala***, J. L. Rivera*, M. J. Hutchins*, W. J. Endres, J. K. Gershenson, D. J. Michalek, and J. W. Sutherland†, 2005, "Towards Manufacturing/Mechanical Engineering Curricular Change in Support of a Sustainable Future," *Looking Forward: Innovations in Manufacturing Engineering Education, CIMEC (CIRP International Manufacturing Engineering Education Conference) and 3rd SME International Conference on Manufacturing Education*, San Luis Obispo, CA, pp. 50-58. (contributing author; unknown acceptance rate)

89. **Haapala, K. R.***, K. N. Khadke*, and J. W. Sutherland†, 2004, "Predicting Manufacturing Waste and Energy for Sustainable Product Development via WE-Fab Software," *Proceedings of the Global Conference on Sustainable Product Development and Life Cycle Engineering*, Sept. 29-Oct. 1, Berlin, Germany, pp. 243-250. (primary author; unknown acceptance rate)

90. Sutherland, J. W.†, K. L. Gunter*, **K. R. Haapala***, K. Khadke*, S. J. Skerlos, J. B. Zimmerman*, W. W. Olson, and R. Sadasivuni, 2003, "Environmentally Benign Manufacturing: Status and Vision for the Future," *Transactions of NAMRI/SME*, Vol. 31, pp. 345-352, 31st North American Manufacturing Research Conference, McMaster University, Hamilton, Ontario, Canada. (contributing author; unknown acceptance rate)

91. **Haapala, K.****, A. Thul**, S. Andrasko**, C. Muehlfeld**, B. Bloss*, R. Nesbitt*, and J.E. Beard, 2002, "Design and Development of the 2001 Michigan Tech FutureTruck, a Power Split Hybrid Electric Vehicle," *SAE 2002 World Congress & Exhibition*, March 4-7, Detroit, MI, pp. 2115-2122, DOI: 10.4271/2002-01-1212. (contributing author; unknown acceptance rate; Also in: **FutureTruck 2001-SP-1701, SAE 2002 Transactions Journal of Engines-V111-3**)

C1.6 Other Publications

(* Graduate Student; ** Undergraduate Student; † Corresponding Author)

1. Poster: Enarevba, D.* and K.R. Haapala, 2023, "Integration of Industry 4.0 Technologies for Facilitating Sustainability Assessment of Biobased Product Manufacturing," 34th Annual

Meeting of the Association for Advancement of Industrial Crops (AAIC), August 27-30, Corvallis, OR.

2. Poster: Enarevba, D.* and K.R. Haapala, 2022, "A Comparative Life Cycle Assessment of Polymer and Bio-Based Packaging Materials," 7th International Forum on Sustainable Manufacturing, October 27-28, Institute for Sustainable Manufacturing, University of Kentucky, Lexington, KY.
3. Report: O'Connor, J. T., A. Shankar Raman*, K. Alhamouri*, K.R. Haapala, and B.K. Paul, 2021, "How Modular Chemical Process Intensification Compares with Conventional Approaches," Technical Report 373, Construction Industry Institute & RAPID Institute, November, pp. 73. https://www.construction-institute.org/resources/knowledgebase/10-10-metrics/result/topics/rt-373/pubs/fr-373.
4. Article: Paul, B.K.†, J.T. O'Connor, **K.R. Haapala**, 2021, "Managing Business Risk in Modular Chemical Process Intensification," CEP, March, pp 22-27, https://www.aiche.org/resources/publications/cep/2021/march/managing-business-risk-modular-chemical-process-intensification.
5. Abstract: Paul, B.K.†, J. O'Connor, K. Haapala, W. TeGrotehuis, "Case Studies in Managing the Risk of Advancing Modular Distributed Chemical Plants, 2020 AIChE Annual Meeting, November 15-10, San Francisco, CA.
6. Poster: Raoufi, K.†, T. Etheridge, B.K. Paul, K.R. Haapala, 2020, "Environmental Impact Assessment of Metal-based Additive Manufacturing Processes," 2020 ASME Manufacturing Science and Engineering Conference, June 22-26, 2020, Cincinnati, Ohio, USA.
7. Poster: Paul, B.K.†, J. O'Connor, K. Haapala, A. Shankar Raman*, and K. Alhamouri*, 2019, "Modeling the Total Cost of Ownership for Scaling-Up via Modular Chemical Process Intensification," RAPID Institute Poster Session, 2019 AIChE Annual Meeting, November 10-15, Orlando, FL.
8. Abstract: Paul, B.K.†, J. O'Connor, K. Haapala, A. Shankar Raman*, and K. Alhamouri*, 2019, "A Case Study for The Use of Conventional and Modular Construction Methods in Building an Intensified Chemical Plant," 2019 AIChE Annual Meeting, November 10-15, Orlando, FL.
9. Abstract: Massoni, B.*†, K.R. Haapala, M.I. Campbell, 2018, "Katana: Geometry Based Cost Modeling and Optimization for Traditional and Advanced Manufacturing," *Proceedings of the ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference*, Paper No. IDETC2018-85481, August 26-29, Quebec City, Quebec, Canada.
10. Extended Abstract: Raoufi, K.†* and K.R. Haapala, 2017, "Promoting Sustainable Product Design using Unit Manufacturing Process Analysis," Society of Design and Process Science Conference (SDPS 2017), November 5-9, Birmingham, AL (2nd Place, Doctoral Symposium, Engineering and Technology Track).
11. Poster: Chan, R.†*, S. Manoharan, and K. Haapala, 2017, "Comparing the Sustainability Performance of Metal-Based Additive Manufacturing Processes," 2017 ASME Design for Manufacturing and the Life Cycle Conference, August 6-9, Cleveland, OH. **(2nd Place in Data-Driven X for the Life Cycle Poster Competition)**

12. Poster: Raoufi, K.†*, K.-Y. Kim, C. Psenka, K. Jackson, G.E. Okudan Kremer, and K. Haapala, 2017, "Enabling Cyber-Based Learning of Product Sustainability Assessment using Unit Manufacturing Process Analysis," 2017 ASME Design for Manufacturing and the Life Cycle Conference, August 6-9, Cleveland, OH. **(Honorable Mention in Data-Driven X for the Life Cycle Poster Competition)**
13. Poster: Kim, K.-Y.†, C.E. Psenka, K.R. Haapala, Jackson, K.L., and G.E. Okudan Kremer, Constructionism in Learning: Sustainable Life Cycle Engineering Project (CooL:SLiCE), NSF Grantees Poster Session, 2017 ASEE Annual Conference & Exposition, June 25-28, Columbus, OH, (Abstract, 6 pp.), DOI: 10.18260/1-2--27912.
14. Poster: Jackson, K.L. †, C.E. Psenka, K.-Y. Kim, K.R. Haapala, and G.E. Okudan Kremer, 2017, "Deepening the Understanding of Sustainable Life Cycle Engineering with Constructionism," Cyberlearning 2017, April 18-19, Washington, D.C.
15. Poster: B. Wang†**, C. Psenka, K.Y. Kim, K.R. Haapala, K.L. Jackson, and G.E. Kremer, 2016, "Cyberlearning and Constructionism in Learning for Sustainable Life-Cycle Engineering," 5th International Congress on Sustainability Science & Engineering (ICOSSE 2016), October 24-27, Suzhou, China.
16. Poster: Raoufi, K.†*, K.-Y. Kim, C. Psenka, K. Jackson, and K. Haapala, 2016, "A Questionnaire-based Methodology to Assist Manufacturing Processes Selection for Sustainable Product Design," 2016 ASME Manufacturing Science and Engineering Conference, June 27-July 1, Blacksburg, VA.
17. Poster: Raoufi, K. *, K.R. Haapala†, K.-Y. Kim, C. Psenka, and K. Jackson, 2016, "A Constructionist Learning Approach for Educating Undergraduate Engineers on Sustainable Design and Manufacturing," Envisioning the Future of Undergraduate STEM Education: Research and Practice, April 27-29, 2016, Washington, D.C.
18. Poster: Doran, M.†*, W. Pratte, R. Malhotra, and K. Haapala, 2016, "Characterization of an Electrically Assisted Grinding Process," OSU Engineering Research Expo, March 1, Portland, OR.
19. Poster: Mirkouei, A.†*, K. Haapala, G. Murthy, and J. Sessions, 2016, "Multi-criteria Decision Making for Sustainable Bio-Oil Production using a Mixed Supply Chain," OSU Engineering Research Expo, March 1, Portland, OR. (2nd Place, Industrial Engineering Category)
20. Poster: Garretson, I.C.*†, M.M. Smullin*, and K.R. Haapala, 2015, "Composing Unit Manufacturing Process Model for Manufacturing Energy Analysis," 2015 California Forum on Energy Efficient Manufacturing (CaFEEM), October 1, University of California-Davis, Davis, CA.
21. Poster: Malshe, H.†*, B. Massoni*, M. Campbell, D. Kim, and K. Haapala, 2015, "Inside the Blank Factory: A Knowledge-Based Manufacturing Plan Generator for Advanced Additive and Joining Processes," 2015 California Forum on Energy Efficient Manufacturing (CaFEEM), October 1, University of California-Davis, Davis, CA.
22. Poster: Jackson, K.†, C. Psenka, K.-Y. Kim, and K.R. Haapala, 2015, "Constructionist Learning for Environmentally Responsible Product Design," 2015 ASEE Annual Conference and Exposition, June 14-17, Seattle, WA.

23. Poster: Raoufi, K.†*, K.-Y. Kim, C. Psenka, K. Jackson, and K. Haapala, 2015, "Manufacturing and Supply Chain Analysis to Support Sustainable Design," 2015 ASME Manufacturing Science and Engineering Conference, June 8-12, Charlotte, NC.
24. Poster: Jackson, K. †, C. Psenka, K.-Y. Kim, and K.R. Haapala, 2015, "New Constructionism: An Approach to Support Deep Understanding of Sustainable Life Cycle Engineering," 2015 IIE/ISERC, May 30-June 2, Nashville, TN.
25. Poster: Tong, A.†*, J. Calvo, and K. Haapala, 2015, "A Dynamic Model of Job Satisfaction," OSU Engineering Research Expo, March 4, Portland, OR.
26. Poster: Mirkouei, A.†* and K.R. Haapala, 2015, "A Network Model to Optimize Upstream and Midstream Biomass-to-Bioenergy Supply Chain Costs," OSU Engineering Research Expo, March 4, Portland, OR.
27. Poster: Mirkouei, A.†* and K.R. Haapala, 2014, "Integration of Machine Learning and Mathematical Programming Methods into the Biomass Feedstock Supplier Selection Process," Oregon BEST FEST, September 15-16, Portland, OR.
28. Extended Abstract: Niyaghi, F.*†, K.R. Haapala, S.L. Harper, M.C. Weismiller, 2013, "Evaluation of ZnO Metalworking Nanofluids (MWnF™)," STLE 68th Annual Meeting & Exhibition, May 5-9, Detroit, MI.
29. Abstract: Clow, W.C.*†, K.R. Haapala, M.D. Carter, E.Y. Lenger, and J.W. Marr, 2012, "A Process-Based Method for Sustainable Manufacturing Assessment," *Proceedings of the IIE Annual Conference and Expo 2012 (ISERC 2012)*, May 19-23, Orlando, FL.
30. Poster: Clow, W.C. †*, K.R. Haapala, E.Y. Lenger, and M.D. Carter, 2011, "A Method and Tool for Manufacturing Sustainability Assessment," 5th International Conference on Business & Sustainability, November 3-4, 2011, Portland, OR.
31. Poster: Prempreeda, P. †*, G. Rodrigo-Asensio*, K. R. Haapala, and T.K.A. Brekken, 2011, "Environmental Impact of Wind Energy and Supplemental Energy Sources in Northern Oregon," *Oregon BEST Fest '11*, September 12, Portland, OR.
32. Abstract: Sahakian, M.V. †*, K.R. Haapala, J.W. Marr, E.C. Eide, E.Y. Lenger, and M.D. Carter, 2010, "Sustainability Assessment of Titanium Aircraft Component Manufacturing," 4th International Conference on Business & Sustainability, November 4-5, 2010, Portland, OR.
33. Poster: Brown, M. O. †*, K. R. Haapala, B. K. Paul, R. D. Glover*, and J. E. Hutchison, 2010, "Application of Life Cycle Assessment for Greener Synthesis of Nickel Nanoparticles," Oregon Nanoscience and Microtechnologies Institute (ONAMI) MegaMixer, August 27, Corvallis, OR.
34. Article: Eatmon, T. D.† and K. R. Haapala, 2010, "Climate Solutions from Nanoscience to Geoengineering: Risk, Scale, and Scientific Uncertainty in Public Policymaking," 2010 AESS (Association for Environmental Studies and Sciences) Conference, June 17-20, Portland, OR.
35. Poster: Brown, M. O. †*, K. R. Haapala, B. K. Paul, R. D. Glover*, and J. E. Hutchison, 2010, "Application of Life Cycle Assessment for Greener Synthesis of Nickel Nanoparticles," Greener Nano 2010 (GN 10): Reducing Principles to Practice, June 16-18, Portland, OR.
36. Poster: Okudan Kremer, G. E. †, Chiu, M.-C.*, K. R. Haapala, and A. J. Alsaffar*, 2010, "Cost and Sustainability Trade-off Analysis for Product Design, Manufacturing, and Supply Chain

Management Dependencies," *Building Partnerships and Pathways to Address Engineering Grand Challenges Conference*, February 8-10, El Paso, TX, *presented by Dr. Okudan Kremer*.

37. Poster: Haapala, K. R. †, 2006, "Predicting Environmental Performance of Manufacturing Operations for Steel Products," Graduate Research Poster Session, Oct. 13-14, Michigan Technological University, Houghton, MI.

Thesis and Dissertation

1. Haapala, K. R., 2008, *The Development of Models for Environmental Performance Improvement of Steel Product Manufacturing*, **Ph.D. Dissertation**, Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University, Houghton, MI. (Advisor: John W. Sutherland)
2. Haapala, K. R., 2003, *A Model for Predicting Manufacturing Waste in Product Design and Process Planning*, **M.S. Thesis**, Department of Mechanical Engineering-Engineering Mechanics, Michigan Technological University, Houghton, MI. (Advisor: John W. Sutherland)

Reports, White Papers, and Other Contributions

1. Haapala, K.R., J.D. Porter, C. Houck, A. Hollis, K. Anderson, B. Diaz Gaitan, M. Raval, M. Callaway, and P. Kenny, 2021, "Manufacturing Resource Allocation Model," Final Report for Lam Research, Inc., July 14.
2. Marr, C., K. Popham, K. Haapala, O.B. Isgor, K. Jones, and J. Parmigiani, 2021, "OMI Project: Green Gear Lubrication Study and Test Execution, Phase 2," Task 1-3 Reports for the Boeing Company, June 3.
3. Haapala, K.R., B.S. Linke, K.C. Morris, W.Z. Bernstein, and F. Zhao, 2019, "Challenges in Representing Manufacturing Processes for Systematic Sustainability Assessments, NSF Workshop Report, held June 21, 2018, Texas A&M University, College Station, TX, Dec. 17.
4. Marr, C., G. Nigon, K. Haapala, O.B. Isgor, K. Jones, and J. Parmigiani, 2019-2020, OMI Project: RX-Wing Aircraft Lubrication Evaluation, Task 1-7 Reports for the Boeing Company.
5. Massoni, B., R. Chan, A. Grier, I. Sargent, K. Haapala, M. Campbell, and D. Kim, 2018, "A Rapid Design and Manufacturing Analysis Tool for Production using the Blank Factory Concept," Phase 4 Final Report for The Boeing Company, December 31.
6. Massoni, B., R. Chan, Z. DeVita, E. Severson, J. Goodman, K. Haapala, M. Campbell, and D. Kim, 2017, "A Rapid Design and Manufacturing Analysis Tool for Production using the Blank Factory Concept," Phase 3 Final Report for The Boeing Company, August 31.
7. Malshe, H., B. Massoni, S. Lindberg, R. Chan, K. Haapala, M. Campbell, and D. Kim, 2016, "Achieving Rapid Configuration Generation and Cost-Competitive Production using the Blank Factory Concept," Phase 2 Final Report for The Boeing Company, July 31.
8. Malshe, H., B. Massoni, K. Haapala, M. Campbell, and D. Kim, 2015, "Defining a Path towards the Blank Factory Project," Phase 1 Final Report for The Boeing Company, June 30.
9. Lajevardi, B., K.R. Haapala, and J.F. Junker, 2015, "Data Center Cooling System Evaluation," Final White Paper for IT Aire, July 31.

10. Lajevardi, B., K.R. Haapala, and J.F. Junker, 2014, "Data Center Cooling System Evaluation," Initial White Paper for IT Aire, July 20.
11. Eastwood, M.D., C.J. Eastwood, I.C. Garretson, and K.R. Haapala, 2014, "Sustainability Assessment for Aircraft Component Manufacturing and Assembly," Phase 3 Final Project Report for The Boeing Company, June 25.
12. Eastwood, M.D., C.J. Eastwood, I.C. Garretson, and K.R. Haapala, 2013, "Sustainability Assessment for Aircraft Component Manufacturing and Assembly," Phase 2 Final Project Report for The Boeing Company, July 9.
13. Niyaghi, F. and K.R. Haapala, 2013, "Feasibility of Non-Destructive Testing of Wooden Helmets," Final Report for Coyle Treepieces, January 25.
14. Zhang, H., A. Suriya, K.R. Haapala, D.S. Kim, 2011, "Development and Application of a Metal Cutting Tool Selection Procedure," Final Report for the Benchmade Knife Company, Inc., October 31.
15. Clow, W.C., Sahakian, M.V., Eastlick, D.D., K.R. Haapala, 2011, "Development of a Sustainability Assessment Method for Fabrication of Metal Aircraft Components," Final Project Report for The Boeing Company, October 7.
16. Zhang, Q., D. M. Johnson, M. Young, L. T. Helmuth, 2008, "Reducing the Environmental Impact of Material Conversion Process," Project Report for Dow Corning, September *(assisted with literature survey and report preparation)*.
17. Sutherland, J. W., 2006, "Global Manufacturing and the Sustainability Challenge," *Technology Century Magazine*, The Engineering Society of Detroit, December 2006/January 2007, pp. 23-25 *(assisted with research and manuscript preparation)*.
18. Haapala, K. R., 2005, "Modeling Energy, Resources, and Wastes for Electric Arc Furnace Melting and Sand Casting of Steel," Summer Internship Report, Caterpillar Inc., Peoria, IL.
19. Bekkala, G., S. Pandit, and J. Sutherland, 2002, "A Framework for Characterizing the Impact of Product Design Decisions on Environmental Performance," *Proceedings of the Japan-USA Symposium on Flexible Automation*, pp. 1369-1376 *(assisted with research and manuscript preparation)*.
20. Haapala, K. R., 2002, "Implementation of an Environmental Management System and Associated Pollution Prevention Opportunities," RETAP P2 Internship Program Report for Flex-N-Gate Forming Technologies, LLC, Warren, MI.

C2. Professional Meetings, Symposia, and Conferences

C2.1. Presentations to Professional Groups

1. Invited Speaker: "Enabling Sustainability Assessment through Manufacturing Information Modeling," Lam Research Technical Symposium, October 6-7, 2022, Berkeley, CA.
2. Invited Speaker: "Integration of Information Modeling and Manufacturing System Design Approaches toward Sustainable Manufacturing," Technical Presentation for Scientific and Technical Committee A (Life Cycle Engineering and Assembly), 2022 CIRP General Assembly, August 22-27, Bilbao, Spain.

3. Keynote Speaker: “Sustainability in Manufacturing,” New Mexico MEP (Manufacturing Extension Partnership) Advanced Manufacturing Summit 2021, October 27-29, 2021 (Virtual).
4. Invited Speaker: “Modular Educational Certification for Advancing Training Online through Industry Collaboration (MECHATRONIC),” 2021 NSF ECR Workforce Development Workshop: New Frontier of Mechatronics for Mobility, Energy, and Production Engineering, September 16-17, Detroit, MI (*invited as PI of related NSF ECR: PEER project*).
5. Presenter/Panelist: “The Fulbright Experience: OSU Faculty Reflect on their 2019-20 Fellowship,” March 18, 2021, Oregon State University, Corvallis, OR (*with fellow scholars Kevin Ahern (Malta), Marit Bovbjerg (Ireland), Julie Elston (Austria), Joan Gross (Belgium), Elise Lockwood (Norway), Hannah Rempel (Czech Republic), and Brian Sidlauskas (Brazil).*).
6. Organizer/Panel Moderator: CESMII Smart Manufacturing Industry Workshop, November 13, 2019, Oregon State University, Corvallis, OR (*co-organizer D. Porter*).
7. Presenter/Panelist: “Melting Pots: A Cacophony of Cultures, A Fusion of Flavors,” American Voices Seminar, October 11-12, 2019, University of Turku, Turku, Finland (*with fellow Fulbright Scholars D. Carranza, C. Confortini, B. Lear, and L. Presser*).
8. “Industrial Sustainability: Reviewing the Past, Envisioning Our Future,” *ASME 2019 14th International Manufacturing Science and Engineering Conference (MSEC)*, June 10-14, 2019, Erie, PA, USA. Presented update on the ASME MED 100-Year Paper for publication in 2020.
9. Visiting Faculty Seminar: “Formalizing Sustainable Manufacturing Assessment through Unit Manufacturing Process Modeling,” September 10, 2018, Tampere University of Technology, Tampere, Finland.
10. Organizer/Facilitator: Reusable Abstractions of Manufacturing Processes (RAMP) Workshop, 2018 ASME Manufacturing Science & Engineering Conference (MSEC), June 18-22, College Station, TX, (*co-organizers: B. Linke of University of California, Davis; F. Zhao, Purdue University; KC Morris/W. Bernstein of the National Institute of Standards and Technology).*
11. Invited Speaker: “Overview of Oregon State University and Research in the Industrial Sustainability Lab,” for the Faculty of Engineering Sciences, May 4, 2018, Tampere University of Technology, Tampere, Finland.
12. Presenter: “B.S. Manufacturing Engineering Curriculum Changes at Oregon State University,” Manufacturing Committee of MECOP Inc., January 12, 2018, Wilsonville, OR (*with B. Paul*).
13. Organizer/Facilitator: Workshop on Using Cyberlearning to Enable Sustainable Engineering Education, SDPS 2017: 22nd International Conference: Emerging Trends and Technologies in Convergence Solutions, November 5-9, 2017, Birmingham, AL, (*co-organizers: K.-Y. Kim of Wayne State University and G. Okudan Kremer of Iowa State University*).
14. Presenter: Clean Energy Smart Manufacturing Innovation Institute (CESMII) Northwest Regional Manufacturing Center, DOE Site Visit, August 31, 2016, Seattle, WA.
15. Organizer/Facilitator: “Defining Industry Needs in Manufacturing Process Characterization,” Industry Roundtable sponsored National Institute of Standards and Technology (NIST), March 12, 2016, Chicago, IL (*co-organizers: S. Shade, J. Sutherland, F. Zhao of Purdue University*).

16. Organizer/Facilitator: "Defining Industry Needs in Manufacturing Process Characterization," Industry Roundtable sponsored National Institute of Standards and Technology (NIST), December 8, 2015, Seattle, WA.
17. "Application of Sustainability Assessment to a Novel Plastic Recycling Process," 2015 ASME IDETC/CIE: 20th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 2-5, Boston, MA. See paper above.
18. Organizer/Facilitator: "Defining Industry Needs in Manufacturing Process Characterization," Industry Roundtable sponsored National Institute of Standards and Technology (NIST), June 18, 2015, Boston, MA (*co-organizer: J. Isaacs of Northeastern University*).
19. Invited Panelist: "Session 2: Standards for data and reporting," Workshop on Standards-based Cloud Services for Manufacturing Sustainability Assessment, National Institute of Standards and Technology, May 5, 2015, Gaithersburg, MD.
20. Presenter: "Industrial and Manufacturing Engineering Research Capabilities," OHSU/OSU Collaboration Meeting, April 14, 2015, Portland, OR.
21. Invited Speaker: "A Unit Process Model Based Methodology to Assist Product Sustainability Assessment During Design for Manufacturing," 4th International Forum on Sustainable Manufacturing at the University of Kentucky, September 12, 2014, Lexington, KY.
22. Invited Participant and Panelist: Smart Manufacturing Workshop, National Institute of Standards and Technology (NIST), June 16-17, 2014, Gaithersburg, MD.
23. Invited Speaker: "Improving Environmental Performance of Cast Metal Products," Oregon Chapter of the American Foundry Society, January 15, 2014, Portland, OR.
24. Organizer/Lecturer: "Sustainability Assessment for Metals Manufacturing," NSF Pan-American Studies Institute (PASI) on Manufacturing Innovation through Sustainable Design, July 13-27, 2013, Barranquilla, Colombia.
25. Invited Panelist: Early Career Forum, 2013 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-13, University of Wisconsin, Madison, WI.
26. Invited Speaker: "Sustainability Assessment of Metal Component Manufacturing and Assembly," National Institute of Standards and Technology (NIST), June 4, 2013, Gaithersburg, MD.
27. Invited Participant: DOE Industrial Assessment Center/SME Student Chapter Partnership, Booth at SME Annual Conference, June 2-3, 2013, Baltimore, MD (*w/ student Cimino-Hurt*).
28. Invited Speaker: "Sustainability Assessment of Titanium and Aluminum Product Manufacturing," Materials Science Seminar, Oregon State University, May 2, 2013, Corvallis, OR.
29. Invited Speaker: "Sustainability in Engineering Design and Manufacturing Engineering," Lundquist College of Business, University of Oregon, October 12, 2012, Eugene, OR.
30. "Increasing the Utility of Sustainability Assessment in Product Design," 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 12-15, Chicago, IL. See paper above.

31. Invited Speaker: “Research in Sustainable Manufacturing Assessment,” Centre for Research in Interdisciplinary Studies in Sustainable Development, Université de Technologie Troyes, June 8, 2012, Troyes, France.
32. Invited Lecturer: *Sustainability Management and Technology*, European Union ERASMUS Intensive Programme, Bethune Institut Universitaire de Technologie, May 27-June 9, 2012, Béthune, France.
33. “A Framework for the Evaluation and Redesign of Human Work Based on Societal Factors,” 19th CIRP International Conference on Life Cycle Engineering (LCE2012), Berkeley, CA, May 23-25, 2012. See paper above.
34. Invited Panelist: “Experiences with Screening UPLCI Studies,” Building the Industry-University Network for Unit Process Life Cycle Inventories (UPLCI/CO2PE!) Workshop, May 23, 2012, Berkeley, CA.
35. Invited Speaker: “Sustainability Assessment in Design for Manufacturing,” Mechanical Engineering Seminar, Portland State University, May 11, 2012, Portland, OR.
36. Panelist: Faculty Panel on Graduate Studies, 2012 IIE Western Regional Conference, March 2-4, Corvallis, OR.
37. Invited Speaker: “Development of a Sustainable Manufacturing Assessment Tool,” Presentation for Boeing, February 29, 2012, Tukwila, WA.
38. Invited Speaker: “Research Case Studies from the OSU Industrial Sustainability Laboratory,” OSU/ESH Corporate Partners Seminar, Oregon State University, November 11, 2011, Corvallis, OR.
39. Invited Speaker: “Advanced Manufacturing and Sustainability,” Smartmap Expo, September 29, 2011, TRAC Center, Pasco, WA.
40. Invited Speaker: “Sustainable Manufacturing Research,” Presentation for National Institute of Standards and Technology (NIST), September 1, 2011, Gaithersburg, MD.
41. “Sustainable Manufacturing Analysis for Titanium Components,” 2011 ASME IDETC/CIE: 16th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 28-31, Washington, D.C. See paper above.
42. “A Conceptual Framework for a Sustainable Product Development Collaboratory to Support Integrated Sustainable Design and Manufacturing,” 2011 ASME IDETC/CIE: 16th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 28-31, Washington, D.C. See paper above.
43. Invited Presenter: “Sustainability Assessment Method for Fabrication of Metal Aircraft Components,” Poster, Boeing SHEA Fair, August 18, 2011, Gresham, OR.
44. Invited Speaker: “Sustainability Assessment of Nanomanufacturing Processes,” Sustainable Nanomanufacturing Workshop, June 13, 2011, Oregon State University, Corvallis, OR.
45. “Integration of Sustainability Issues during Early Design Stages in a Global Supply Chain Context,” 2011 Spring Symposium Series: Artificial Intelligence and Sustainable Design, Association for the Advancement of Artificial Intelligence, March 21-23, Stanford University, Stanford, CA. See paper above.

46. "Sustainability Assessment of Titanium Aircraft Component Manufacturing," 4th International Conference on Business & Sustainability, November 4-5, 2010, Portland, OR.
47. "An Approach for Sustainable Manufacturing," SAE 2010 Aerospace Manufacturing and Automated Fastening Conference & Exhibition, September 28-30, Wichita, KS.
48. "Life Cycle Assessment of Modern Wind Power Plants," 2010 ASME IDETC/CIE: 15th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 15-18, Montreal, Canada. See paper above.
49. "Defining the Dimensions of Human Work for Industrial Sustainability Assessment," 17th CIRP International Conference on Life Cycle Engineering (LCE2010), Hefei, China, May 19-21. See paper above.
50. "Challenges Facing Engineers in Evaluating Life Cycle Impacts of Emerging Technologies," 17th CIRP International Conference on Life Cycle Engineering (LCE2010), Hefei, China, May 19-21. See paper above.
51. Invited Speaker: "Improving Environmental Performance of Manufacturing Operations," Webinar, April 22, 2010, Boeing Sustainable Manufacturing National Working Group.
52. "An Environmental Analysis of Nanoparticle-Assisted Diffusion Brazing," 2009 ASME Manufacturing Science & Engineering Conference (MSEC), October 4-7, West Lafayette, IN. See paper above.
53. "Reducing Environmental Impacts of Steel Product Manufacturing," 37th Annual North American Manufacturing Research Conference, May 19-22, 2009, Greenville, SC. See paper above.
54. "Decision-Making for Sustainable Manufacturing," Doctoral Research Presentation, August 15, 2008, Caterpillar Inc., Champaign, IL.
55. "Decision-Making for Sustainable Manufacturing," Doctoral Research Presentation, August 14, 2008, Caterpillar Inc., Peoria, IL.
56. "A Life Cycle Environmental and Economic Comparison of Product-Service Systems," 36th Annual North American Manufacturing Research Conference, May 20-23, 2008, Monterrey, Mexico. See paper above.
57. "Incorporating Environmental Sustainability Concepts into Manufacturing Decision Making," CII Henes Fellow Lecture, March 21, 2008, Michigan Technological University.
58. "Decision-Making for Sustainable Manufacturing," Doctoral Research Presentation, March 13, 2008, Caterpillar Inc., Peoria, IL.
59. "Education, Research, and Training Aspects of the Sustainable Futures NSF IGERT Project," ASEE North Midwest Section Conference, Sep. 20-22, 2007, Houghton, MI. See paper above.
60. "Optimization of Steel Production to Improve Lifecycle Environmental Performance," CIRP General Assembly, August 19-25, 2007, Dresden, Germany. See paper above.
61. "Optimization of Steel Production to Improve Lifecycle Environmental Performance," SFI Colloquium in Sustainability, Aug. 8, 2007, Michigan Technological University, Houghton, MI.

62. "Issues Associated with MQL Implementation: Effect on Peripheral Milling Process Performance and Impact on Machining Economics," ASME/IMECE, Nov. 5-11, 2005, Orlando, FL. See paper above.
63. Presenter/Facilitator: "Sustainable Design and Manufacturing," SFI Colloquium in Sustainability, July 11, 2007, Michigan Technological University, Houghton, MI *(co-facilitator: M.J. Hutchins*).
64. "Optimization of EAF Steelmaking Environmental Performance: A Process Modeling Approach," Sigma Xi Research Colloquium, April 14, 2007, Michigan Technological University, Houghton, MI.
65. "Michigan Tech and the Sustainable Futures Institute," for the Laboratory of Process Metallurgy, Aug. 2, 2006, University of Oulu, Finland.
66. "An Overview of the Sustainable Futures Institute at Michigan Tech," for the Factory Team, June 13, 2006, University of Oulu, Finland.
67. "Environmental Performance of Manufacturing Operations," for the Factory Team, June 9, 2006, University of Oulu, Finland.
68. "Predicting Environmental Performance of Manufacturing Operations for Steel Products," Sustainable Futures Institute Research Colloquium, Jan. 18, 2006, Michigan Technological University, Houghton, MI.
69. "Caterpillar Internship 2005: Modeling Manufacturing Process Energy, Resources, and Wastes," Sustainable Futures Institute (SFI) Brown Bag Seminar, Sep. 7, 2005, Michigan Technological University, Houghton, MI.
70. Panelist: "Teaching Political Science Across Disciplines," Michigan Conference of Political Sciences – 36th Annual Meeting, Oct. 15-16, 2004, Mt. Pleasant, MI.

Presentations to Professional Groups by Students and Collaborators

1. "Rapid Supply Chain Configuration through Unit Manufacturing Process Modeling," 2023 ASME IDETC/CIE: 28th Design for Manufacturing and the Life Cycle Conference (DFMLC), August 20-23, Boston, Massachusetts. (*Presented by M. Kabiri, Ph.D. advisee*).
2. "Do I need to know this?: A comparison of mechatronics program offerings to industry expectations for necessary on-the-job skillsets," 130th Annual Conference of the American Society for Engineering Education, June 25-28, 2023, Baltimore, MD. (*Presented by N. Raghunath, Ph.D. student of collaborator*). See paper above.
3. "Examining industry expectations for content knowledge in mechatronics across career and professional certificate programs," 51st SME North American Manufacturing Research Conference, June 12-16, 2023, New Brunswick, NJ. (*Presented by N. Raghunath, Ph.D. student of collaborator*).
4. "A Framework for Predicting Grain Morphology during Incremental Sheet Metal Forming using Generative Adversarial Networks," 51st SME North American Manufacturing Research Conference, June 12-16, 2023, New Brunswick, NJ. (*Presented by A. Harfoush, Ph.D. student co-advisee*).

5. "A Bayesian Approach to Modeling Unit Manufacturing Process Environmental Impacts using Limited Data with Case Studies on Laser Powder Bed Fusion," 30th CIRP Life Cycle Engineering Conference, May 15-17, 2023, New Brunswick, NJ. (*Presented by J. Liao, Ph.D. student of collaborator*). See paper above.
6. "A Comparative Life Cycle Assessment of Expanded Polystyrene and Mycelium Packaging Box Inserts," 30th CIRP Life Cycle Engineering Conference, May 15-17, 2023, New Brunswick, NJ. (*Presented by D. Enarevba, Ph.D. student advisee*). See paper above.
7. "The multifaceted state of mechatronics education in the United States," 2023 Annual Meeting of the American Educational Research Association, April 13-16, 2023, Chicago, IL. (*Presented by C. Sanchez, collaborator*).
8. "A Study of Hop Kilning Energy Consumption with Respect to Drying Temperatures in the Pacific Northwest," 8th Thermal and Fluids Engineering Conference (TFEC), March 26-29, 2023, College Park, MD. (*Presented by M. Thomas, M.S. student co-advisee*). See paper above.
9. "The Role of Industry 4.0 Technologies in Manufacturing Sustainability Assessment," 17th ASME International Manufacturing Science and Engineering Conference (MSEC), June 27-July 1, 2022, West Lafayette, IN, (*Presented by D. Ramanujan, collaborator*). Invited co-author of ASME MED state-of-the-art paper; See journal paper above.
10. "Systematic Manufacturability Evaluation using Dimensionless Metrics and Singular Value Decomposition: A Case Study for Additive Manufacturing," 30th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM), September 7-10, 2021, Athens, Greece (*Presented online by E. Coatanea, collaborator*). See paper above.
11. "Application of Artificial Intelligence in Incremental Sheet Metal Forming: A Review," NAMRC 49 Virtual Conference, June 22-25, 2021, University of Cincinnati, Online (*Presented by A. Harfoush, Ph.D. advisee*). See paper above.
12. "Case Studies in Managing the Risk of Advancing Modular Distributed Chemical Plants," 2020 AIChE Annual Meeting (Topical Conference: Next-Gen Manufacturing), November 15-20, 2020, San Francisco, CA, (*Presented by B.K. Paul, collaborator*).
13. "A Case Study for the Use of Conventional and Modular Construction Methods in Building an Intensified Chemical Plant," 2019 AIChE Annual Meeting, November 10-15, 2019, Orlando, FL, (*Presented by B.K. Paul, collaborator*). See abstract above.
14. "Modular Chemical Process Intensification," Presented to the CII Modular Community for Business Advancement, June 5, 2019, Houston, TX. (*Presented by J. O'Connor with B. Paul and students K. Alhamouri, A. Shankar Raman, and S. Summerville*).
15. "Tracing the Interrelationship between Key Performance Indicators and Production Cost using Bayesian Networks," *52nd CIRP Conference on Manufacturing Systems*, June 12-14, 2019, Ljubljana, Slovenia, (*Presented by S. Panicker, Ph.D. advisee*). See paper above.
16. "Probabilistic Modelling of Defects in Additive Manufacturing: A Case Study in Powder Bed Fusion," *52nd CIRP Conference on Manufacturing Systems*, June 12-14, 2019, Ljubljana, Slovenia, (*Presented by S. Panicker, Ph.D. advisee*). See paper above.
17. "Challenges in Representing Manufacturing Processes for Systematic Sustainability Assessments – Workshop on June 21, 2018," *ASME 2019 14th International Manufacturing*

Science and Engineering Conference (MSEC), June 10-14, 2019, Erie, PA, USA. (*Presented by A. Shankar Raman, Ph.D. advisee*). See paper above.

18. "Enabling Sustainability Performance Assessment by Non-Experts through Improved Visual Communication Methods and Tools," *26th CIRP Life Cycle Engineering Conference*, May 7-9, 2019, West Lafayette, IN, USA. (*Presented by K. Raoufi, Ph.D. advisee*). See paper above.
19. "A Grey Box Software Framework for Sustainability Assessment of Composed Manufacturing Processes: A Hybrid Manufacturing Example," *26th CIRP Life Cycle Engineering Conference*, May 7-9, 2019, West Lafayette, IN, USA. (*Presented by S. Manoharan, M.S. advisee*). See paper above.
20. "Towards Sustainable Manufacturing by Extending Manufacturing Execution System Functions," *20th International Conference on Industrial Technology (IEEE-ICIT 2019)*, February 13-15, 2019, Melbourne, Australia. (*Presented by A. Lobov, collaborator*). See paper above.
21. Invited Exhibitor: "Smart Manufacturing," Symposium on The Promise and the Peril of Artificial Intelligence and Robotics, October 23, 2018, Oregon State University, Corvallis, OR (*with Z. Fan and students S. Desabathina and T. Lee*).
22. "Aggregating Unit Process Models to Enable Environmental Impact Characterization of Polymer-Based Hybrid Manufacturing," 16th Global Conference on Sustainable Manufacturing (GCSM), October 2-4, 2018, Lexington, Kentucky. (*Presented by S. Manoharan, M.S. advisee*). **Paper selected for Special Issue of the International Journal of Sustainable Manufacturing and removed from the conference proceedings as a result.**
23. "Assessing Component Machinability using Voxelized Solid Models," ASME 2018 International Design Engineering Technical Conferences & Computers and Information in Engineering Conference, August 26-29, 2018, Quebec City, Quebec, Canada. (*Presented by R. Chan, M.S. advisee*). See paper above.
24. "Comparison between Artificial Neural Network and Random Forest Based Multi-Sensor Fusion for Predicting CBN Wheel Condition," International Symposium on Flexible Automation (ISFA 2018), July 15-19, 2018, Kanazawa, Japan. (*Presented by D. Porter, collaborator*). See paper above.
25. "Multi-Sensor Data Fusion for Specific Energy Estimation in the Grinding Process," International Symposium on Flexible Automation (ISFA 2018), July 15-19, 2018, Kanazawa, Japan. (*Presented by S. Desabathina, M.S. advisee*). See paper above.
26. "Thermal Performance Evaluation of a Residential Solar/Gas Hybrid Water Heating System," 5th International High Performance Buildings Conference at Purdue, July 9-12, 2018, West Lafayette, IN. (*Presented by S. Karki, M.S. advisee*). See paper above.
27. "Demonstrating a Standard Methodology for Sustainable Manufacturing Process Characterization," ASME 2018 International Manufacturing Science and Engineering Conference (MSEC), June 18-22, 2018, College Station, Texas, USA. (*Presented by A. Shankar Raman, Ph.D. advisee*). See paper above.
28. "Benchmarking Undergraduate Manufacturing Engineering Curricula in the United States," 46th SME NAMRC, June 18-22, 2018, College Station, Texas. (*Presented by K. Raoufi, Ph.D. advisee*). See paper above.

29. "A Sustainability Assessment Framework for Dynamic Cloud-based Distributed Manufacturing," 25th CIRP Life Cycle Engineering Conference, April 30-May 2, 2018 Copenhagen, Denmark. (*Presented by H. Nagarajan, PhD. advisee*). See paper above.
30. "Promoting Sustainable Product Design using Unit Manufacturing Process Analysis," *Society of Design and Process Science Conference (SDPS 2017)*, November 5-9, Birmingham, AL. (P*resented by K. Raoufi, Ph.D. advisee*). See extended abstract above.
31. "Comparing the Sustainability Performance of Metal-Based Additive Manufacturing Processes," *2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA. (*Presented by R. Chan and S. Manoharan, M.S. advisees*). See paper above.
32. "Enabling Cyber-Based Learning of Product Sustainability Assessment using Unit Manufacturing Process Analysis," *2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA. (*Presented by K. Raoufi, Ph.D. advisee*). See paper above.
33. "Understanding the Sustainability of Eco-Labeled Products when Compared to Conventional Alternatives," *2017 ASME IDETC/CIE: 22nd Design for Manufacturing and the Life Cycle Conference (DFMLC)*, August 6-9, Cleveland, Ohio, USA. (*Presented by V. Ferrero, collaborating M.S. student*). See paper above.
34. "Integration of Sustainability Indicators and the Viable System Model toward a Systemic Sustainability Assessment Methodology," 61st Annual Meeting of the ISSS - 2017, July 9-14, Vienna, Austria. (*Presented by A. Tong, Ph.D. advisee*). See paper above.
35. "Enabling Non-Expert Sustainable Manufacturing Process and Supply Chain Analysis during the Early Product Design Phase," NAMRI/SME 45 (2017), June 4-8, Los Angeles, California, USA. (*Presented by K. Raoufi, Ph.D. advisee*). See paper above.
36. "A Desktop Application for Sustainability Performance Assessment of Composed Unit-Based Manufacturing Systems," ASME 2017 International Manufacturing Science and Engineering Conference (MSEC), June 4-8, Los Angeles, California, USA. (*Presented by A. Shankar Raman, Ph.D. advisee*). See paper above.
37. "Environmental Performance Evaluation of Direct Metal Laser Sintering through Exergy Analysis," NAMRI/SME 45 (2017), June 4-8, Los Angeles, California, USA. (*Presented by H.P.N. Nagarajan, M.S. advisee*). See paper above.
38. "Development of Learning Modules for Sustainable Life Cycle Product Design: A Constructionist Approach," 2017 ASEE Annual Conference & Exposition, June 25-28, Columbus, OH. (*Presented by T. Khan, collaborating Ph.D. student*). See paper above.
39. "A Full Cost Model for Sustainable Manufacturing Systems" American Society for Engineering Management 2016 International Annual Conference, October 26-29, Concord, NC. (*Presented by H. Zhang, Ph.D. advisee, Collaborators: K. Haapala, J. Calvo-Amodio*). Presentation only.
40. "Reducing Greenhouse Gas Emissions for Sustainable Bio-Oil Production Using A Mixed Supply Chain," 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Life Cycle Conference (DFMLC), August 21-25, Charlotte, North Carolina, USA. (*Presented by A. Mirkouei, Ph.D. advisee*). See paper above.

41. “Using Industry Focus Groups and Literature Review to Identify Challenges in Sustainable Assessment Theory and Practice,” 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Lifecycle Conference (DFMLC), August 21-24, Charlotte, North Carolina, USA. (*Presented by M. Smullin, M.S. advisee*). See paper above.
42. “An Approach to Compare Sustainability Performance of Additive and Subtractive Manufacturing during Process Planning,” 2016 ASME IDETC/CIE: 21st Design for Manufacturing and the Lifecycle Conference (DFMLC), August 21-24, Charlotte, North Carolina, USA. (*Presented by M. Doran, M.S. advisee*). See paper above.
43. “Composability of Unit Manufacturing Process Models for Manufacturing Systems Analysis,” 2016 ASME International Manufacturing Science and Engineering Conference (MSEC), June 27-July 1, Blacksburg, Virginia, USA. (*Presented by M. Smullin, M.S. advisee*). See paper above.
44. “A Pedagogical Module Framework to Improve Scaffolded Active Learning in Manufacturing Engineering Education,” SME/NAMRC 44 (2016), June 27-July 1, Blacksburg, Virginia, USA. (*Presented by A. Mirkouei, Ph.D. advisee*). See paper above.
45. “Discussion on Constructionism and Sustainable Lifecycle Engineering,” IIE Annual Conference and Expo 2016 (ISERC 2016), May 21-24, Anaheim, California, USA. Abstract only; ID #689. (*Presented by K.Y. Kim, Co-authors: K. Haapala, C. Psenka, K. Jackson*).
46. “Environmental Analysis of a Mixed-Mode Forest Biomass-to-Bio-oil Supply Chain,” IIE Annual Conference and Expo 2016 (ISERC 2016), May 21-24, Anaheim, California, USA. Abstract only; ID #136. (*Presented by A. Mirkouei, Ph.D. advisee; Co-authors: K. Haapala, J. Sessions, G. Murthy*)
47. “Evolutionary Optimization of Bioenergy Supply Chain Cost with Uncertain Forest Biomass Quality and Availability,” IIE Annual Conference and Expo 2016 (ISERC 2016), May 21-24, Anaheim, California, USA. (*Presented by A. Mirkouei, Ph.D. advisee*). See paper above.
48. “A Dynamic Model of Job Satisfaction and Turnover: Framework for Model Development and Simulation,” 2015 ASEM International Annual Conference, October 7-10, Indianapolis, IN (*Presented by A. Tong, Ph.D. advisee*). See paper above.
49. “Safety: Let's Start at the Beginning,” 2015 ASEM International Annual Conference, October 7-10, Indianapolis, IN (*Presented by A. Tong, Ph.D. advisee*). See paper above.
50. “Unit Manufacturing Process Models for Ferromagnetic and Non-Ferromagnetic Alloy Surface Inspection Methods,” 2015 ASME IDETC/CIE: 20th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 2-5, Boston, MA (*Presented by I. Garretson, M.S. advisee*). See paper above.
51. “A Network Model to Optimize Upstream and Midstream Biomass-to-Bioenergy Supply Chain Costs,” 2015 ASME International Manufacturing Science and Engineering Conference (MSEC), June 8-12, Charlotte, NC (*Presented by A. Mirkouei, Ph.D. advisee*). See paper above.
52. “Profile of Sustainability in Additive Manufacturing and Environmental Assessment of a Novel Stereolithography Process,” 2015 ASME International Manufacturing Science and Engineering Conference (MSEC), June 8-12, Charlotte, NC (P*resented by H. Malshe, M.S. advisee*). See paper above.

53. "Manufacturing Energy Analysis of a Microchannel Heat Exchanger for High-Density Servers," SME/NAMRC 43 (2015), June 8-12, Charlotte, NC (*Presented by I. Garretson, M.S. advisee*). See paper above.
54. "Gate-To-Gate Sustainability Assessment for Small-Scale Manufacturing Businesses: Caddisfly Jewelry Production," 2014 ASME IDETC/CIE: 19th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 17-20, Buffalo, NY (*Presented by I. Garretson, M.S. advisee*). See paper above.
55. "A Software Tool for Unit Process-Based Sustainable Manufacturing Assessment of Metal Components," 2014 ASME IDETC/CIE: 19th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 17-20, Buffalo, NY (*Presented by I. Garretson, M.S. advisee*). See paper above.
56. "Real-time Monitoring and Evaluation of Energy Efficiency and Thermal Management of Data Centers," SME/NAMRC 42 (2014), June 9-12, Detroit, MI (*Presented by B. Lajevardi, Ph.D. advisee*). **Paper was one of five fast-tracked to SME Journal of Manufacturing Systems and removed from the conference proceedings as a result.**
57. "A Proposed Hybrid-Dynamic Transition Phase for High Mix Low Volume Manufacturers," IIE Annual Conference and Expo 2014 (ISERC 2014), May 31-June 3, Montreal, Quebec, Canada (*Presented by O. Girod, B.S. Honors thesis advisee*). See paper above.
58. "A Framework for Assessing Environmental and Operational Performance of New Manufacturing Process Technology," IIE Annual Conference and Expo 2014 (ISERC 2014), May 31-June 3, Montreal, Quebec, Canada (*Presented by A. Cimino-Hurt, M.S. advisee*). See paper above.
59. "An Energy Efficiency Metric for Data Center Assessment," IIE Annual Conference and Expo 2014 (ISERC 2014), May 31-June 3, Montreal, Quebec, Canada (*Presented by B. Lajevardi, Ph.D. advisee*).
60. "Integration of Machine-Learning and Mathematical Programming Methods into the Biomass Feedstock Supplier Selection Process," 24th International Conference on Flexible Automation and Intelligent Manufacturing (FAIM), May 20-23, 2014, San Antonio, TX (*Presented by A. Mirkouei, Ph.D. advisee*). See paper above.
61. "Product and Process Design for Sustainable Assembly," 2013 ASME International Mechanical Engineering Conference and Exposition (MSEC), November 15-21, San Diego, CA (*Presented by M. Eastwood, M.S. advisee*). See paper above.
62. "A Systems Thinking Approach for Modeling Sustainable Manufacturing Problems in Enterprises," American Society for Engineering Management 2013 International Annual Conference, October 2-5, Minneapolis, MN (*Presented by H. Zhang, Ph.D. advisee*). See paper above.
63. "A Systems Thinking Approach for Modeling Sustainable Manufacturing Problems in Enterprises," American Society for Engineering Management 2013 International Annual Conference, October 2-5, Minneapolis, MN (*Presented by H. Zhang, Ph.D. advisee*). See paper above.
64. "Comparison of Sustainability Performance for Cross Laminated Timber and Concrete," 2013 ASME IDETC/CIE: 18th Design for Manufacturing and the Lifecycle Conference (DFMLC),

August 4-7, Portland, OR (*Presented by J. Piacenza, Oregon State University Ph.D. student*). See paper above.

65. "Functional Impact Comparison of Common and Innovative Products," 2013 ASME IDETC/CIE: 18th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 4-7, Portland, OR (*Presented by B. Gilchrist, Oregon State University M.S. student*). See paper above.
66. "Assisting Sustainable Manufacturing Enterprise through System Dynamics: A Conceptual Model," NAMRI/SME, June 10-13, University of Wisconsin, Madison, WI. (*Presented by H. Zhang, Ph.D. advisee*). **Paper was one of seven fast-tracked to SME Journal of Manufacturing Systems and removed from the conference proceedings as a result.**
67. "A Comparison of Modularity Methods for Their Implications on Sustainability," IIE Annual Conference and Expo 2013 (ISERC 2013), May 18-22, San Juan, Puerto Rico (*Presented by G.E. Okudan Kremer, Pennsylvania State University*). See paper above.
68. "Evaluation of ZnO Metalworking Nanofluids (MWnF™)," STLE 68th Annual Meeting & Exhibition, May 5-9, 2013, Detroit, MI (*Presented by F. Niyaghi, M.S. advisee*). See extended abstract above.
69. "Environmental Impacts of Wind and Supplemental Energy Systems," Oregon BEST FEST, September 13, 2012, Portland, OR (*Presented by P. Prempreeda, M.S. advisee*).
70. "Comparison of Environmental Impacts of Innovative and Common Products," 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 12-15, Chicago, IL (*Presented by B.P. Gilchrist, Oregon State University M.S. student*). See paper above.
71. "Computer-aided Generation of Modular Designs Considering Component End-of-Life Options: Implications for the Supply Chain," 2012 ASME IDETC/CIE: 17th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 12-15, Chicago, IL (*Presented by G.E. Okudan Kremer, Pennsylvania State University*). See paper above.
72. "A Process-Based Approach for Cradle-to-Gate Energy and Carbon Footprint Reduction in Product Design," 2012 ASME International Manufacturing Science & Engineering Conference (MSEC), June 4-8, Notre Dame, IN (*Presented by A.J. Alsaffar, M.S. advisee*). See paper above.
73. "Integrating Sustainability Assessment into Manufacturing Decision Making," 19th CIRP International Conference on Life Cycle Engineering (LCE2012), Berkeley, CA, May 23-25, 2012 (*Presented by H. Zhang, M.S. advisee*). See paper above.
74. "A Process-Based Method for Sustainable Manufacturing Assessment," IIE Annual Conference and Expo 2012 (ISERC 2012), May 19-23, Orlando, FL (*Presented by W.C. Clow, M.S. advisee*). See abstract above.
75. "A Review of Engineering Research in Sustainable Manufacturing," 2011 ASME International Manufacturing Science & Engineering Conference (MSEC), Manufacturing Engineering Division Biennial State of the Art Paper, June 13-17, Corvallis, OR (*Presented by J. Camelio, Virginia Tech University and F. Zhao, Purdue University*). See paper above.

76. “Consideration of Manufacturing Processes and the Supply Chain in Product Design,” 2011 ASME International Manufacturing Science & Engineering Conference (MSEC), June 13-17, Corvallis, OR (*Presented by A.J. Alsaffar, M.S. advisee*). See paper above.
77. “Environmental and Cost Assessment of Several Injection Molded Materials,” 2011 ASME International Manufacturing Science & Engineering Conference (MSEC), June 13-17, Corvallis, OR (*Presented by M.V. Sahakian, M.S. advisee*). See paper above.
78. “Environmental Impact and Cost Assessment of Product Service Systems using IDEF0 Modeling,” 39th North American Manufacturing Research Conference (NAMRC), June 13-17, 2011, Corvallis, OR (*Presented by H. Zhang, M.S. advisee*). See paper above.
79. “Positioning Product Architecture as the Driver for Carbon Footprint & Efficiency Trade-offs in A Global Supply Chain,” International Conference on Industrial Engineering and Systems Management (IESM 2011), May 25 - 27, 2011, Metz, France, (*Presented by G.E. Okudan Kremer, Pennsylvania State University)*. See paper above.
80. “Toward Collaborative E-learning for Sustainable Design and Manufacturing,” IIE Annual Conference and Expo 2011 (IERC 2011), Reno, NV, abstract with Kim, K.-Y., G. E. Okudan Kremer, E. A. Murat, and R. B. Chinnam. (*Presented by K.-Y. Kim, Wayne State University)*.
81. “Environmental Impacts of Microchannel Air Preheater Manufacturing under Different Scenarios,” IIE Annual Conference and Expo 2011 (IERC 2011), Reno, NV (*Presented by M.O. Brown, M.S. advisee*). See paper above.
82. “Automating Environmental Impact Assessment during the Conceptual Phase of Product Design,” 2011 Spring Symposium Series: Artificial Intelligence and Sustainable Design, Association for the Advancement of Artificial Intelligence, March 21-23, Stanford University, Stanford, CA (*Presented by K. Poppa, Oregon State Ph.D. student).* See paper above.
83. “Addressing Uncertainty in the Environmental Analysis of Nickel Nanoparticle Production,” 2010 ASME International Manufacturing Science & Engineering Conference (MSEC), October 12-15, Erie, PA (*Presented by M.O. Brown, M.S. advisee*). See paper above.
84. “Environmental Analysis of Consumer Products During the Conceptual Phase of Product Design,” 2010 ASME IDETC/CIE: 15th Design for Manufacturing and the Lifecycle Conference (DFMLC), August 15-18, Montreal, Canada (*Presented by M.R. Bohm, University of Louisville).* See paper above.
85. “Climate Solutions from Nanoscience to Geoengineering: Risk, Scale, and Scientific Uncertainty in Public Policymaking,” 2010 Association for Environmental Studies and Sciences Conference, June 17-20, Portland, OR (*Presented by T.D. Eatmon, Alleghany College).* See paper above.
86. “Application of Life Cycle Assessment for Greener Synthesis of Nickel Nanoparticles,” Greener Nano 2010 (GN 10): Reducing Principles to Practice, June 16-18, Portland, OR (*Presented with M.O. Brown, M.S. Advisee).* See poster above.
87. “Reducing Supply Chain Costs and Carbon Footprint during Product Design,” 2010 IEEE International Symposium on Sustainable Systems and Technology, May 16-19, Washington, DC (*Presented by M.-C. Chiu, Penn State)*. See paper above.

C2.2. Participation at Invitational Workshops

1. Invited Participant: Symbiosis Training Program, Kalundborg Industrial Symbiosis, October 10-11, 2023, Portland, OR. *(~30 attendees from academia, industry, and government)*.
2. Invited Participant: Clean Industry Roadmapping Workshop, City of Portland, June 22, 2023, Portland, OR *(~50 attendees from academia, industry, and government)*.
3. Invited Participant: Symbiosis Training Program, Kalundborg Industrial Symbiosis, May 30-June 2, 2023, Kalundborg, Denmark. *(~40 attendees from academia, industry, and government)*.
4. Invited Participant: TRANSSFORM Initiative Workshop, Hosted by the DOE/EERE Advanced Manufacturing Office (AMO), September 8-10, 2021, online *(~100 attendees from academia, industry, and government)*.
5. Invited Participant: SME NAMRI Manufacturing Engineering Education Workshop, June 21, 2021, online (*selected faculty among about 50 participants from industry and academia*).
6. Invited Participant: NSF Workshop for Industry-Academia Collaboration in Advanced Manufacturing, May 19-21, 2021, online (*selected academic researcher among about 300 attendees from academia, manufacturing industry, and Manufacturing USA Institutes*).
7. Invited Participant: NIST Sustainable Manufacturing Standards Workshop, August 31, 2020, online (*roundtable of DOE Industrial Assessment Center Directors and Assistant Directors*).
8. Invited Participant: Open Energy Outlook for the U.S., Workshop supported by the Sloan Foundation, January 7-8, 2020, Raleigh, NC (*4-person working group on the industrial sector*).
9. Invited Participant: Fulbright Finland Arrival Orientation, Helsinki, Finland, Aug. 19-22, 2019.
10. Invited Participant: OMIC R&D 2019 Technical Roadmapping Workshop, June 20, 2019, Scappoose, OR (*selected to represent advanced/smart manufacturing research at Oregon State University*).
11. Invited Participant: Italian Machine Tool Technology Award Program (Italian Trade Agency), November 3-11, 2018, Milan, Italy *(3 invited students, 1 invited faculty from several nations)*.
12. Invited Participant (as NSF IUSE PI): "Envisioning the Future of Undergraduate STEM Education: Research and Practice," April 27-29, 2016, Washington, D.C.
13. Invited Participant: "Summit on Global Sustainability in Engineering Education," March 30-April 2, 2016, Harrisonburg, VA.
14. Invited Participant: "Enabling Sustainable and Resilient Supply Chains During Early Product Design," NSF I/UCRC Center for e-Design Strategic Planning Meeting, July 31-August 1, 2013, Corvallis, OR.
15. Invited Participant: Faculty-Student Mentor Program (FSMP) Fall Learning Community Meeting, November 27, 2018, Oregon State University, Corvallis, OR. (invited as mentor in pilot program)
16. Invited Participant: Faculty-Student Mentor Training Workshop, September 19, 2018, Oregon State University, Corvallis, OR. (invited as mentor in pilot program)
17. Invited Participant: 2017 Tri-State FEW (Food-Energy-Water) Workshop, October 23-24, 2017, Hermiston, OR.

18. Invited Participant: Diversity, Equity, and Inclusion Workshop (Kardia Group), February 27-28, 2017, Oregon State University, Corvallis, OR. (member of COE Change Team)
19. Invited Participant: Diversity, Equity, and Inclusion Workshop (Kardia Group), December 6-7, 2016, Oregon State University, Corvallis, OR. (member of COE Change Team)
20. Invited Participant: NSF TECAID Workshop 3, February 25-27, 2016, Dallas, TX.
21. Invited Participant: NSF TECAID Workshop 2, October 1-3, 2015, Chicago, IL.
22. Invited Participant: National Academy of Engineering (NAE) 2015 US Frontiers of Engineering Symposium (US FOE), September 9-11, Irvine, CA. (*US FOE brings together a select group of about 100 outstanding US engineers, ages 30-45, to discuss pioneering technical work and leading-edge research in various engineering fields and industry sectors*)
23. Invited Participant: NSF Workshop on Sustainable Manufacturing, August 20-21, 2015, Washington, D.C. *(~50 invited attendees from academia, industry, and government)*.
24. Invited Participant: NSF TECAID Workshop 1, April 16-18, 2015, Phoenix, AZ.
25. Invited Participant: NSF Workshop on Environmental Implications of Additive Manufacturing, October 14-15, 2014, Washington, D.C.
26. Invited Participant: NSF Workshop on Faculty Development Needs for Advanced Manufacturing in the USA, January 9-10, 2014, Washington, D.C.
27. Invited Participant: NSF CI-TEAM Principal Investigator's Meeting, May 24-26, 2011, Champaign-Urbana, IL. (Invited as PI of an NSF CI-TEAM project)
28. Invited Participant: Sustainable Aerospace Manufacturing Initiative (SAMI) Academic Workshop, March 10, 2011, Berkeley, CA. (Invited as a researcher in sustainable manufacturing; ~20 attendees)
29. Invited Participant: NSF Computing Education for the 21st Century Community Meeting, January 31-February 1, 2011, New Orleans, LA. (Invited as PI of an NSF CI-TEAM project)
30. Invited Participant: NSF Proposal Writing Workshop, September 1-2, 2010, Lincoln, NE. (Selected through application process)
31. Invited Participant: NSF Workshop: Design Methods for Sustainability, Group 2: Manufacturing Issues, August 15, 2010, Montreal, Quebec, Canada. (Selected through application process)
32. Invited Participant: College of Business C2C Project Faculty Discussion Group on the OSU College of Engineering, Corvallis, OR, May 25, 2010. (Focus group for new faculty employees)
33. Invited Participant: Center for Sustainable Engineering Workshop, Carnegie Mellon University, Pittsburgh, PA, July 13-14, 2009. (Selected through application process)
34. Invited Participant: CIRP 2009 General Assembly, August 23-27, 2009, Boston, MA. (Selected through application process for travel award.)
35. Invited Participant: Institute of Industrial Engineers (IIE) New Faculty Colloquium, Miami, FL, May 30, 2009. (Nominated by School Head)

Participation at Other Conferences/Meetings/Workshops

1. ASTM E60 Workshop on Fostering a Circular Economy of Manufacturing Material, April 20-22, 2022, Virtual Workshop, National Institute of Standards and Technology, online.
2. Infusing Advanced Manufacturing in Engineering Education, February 24-25, 2022, Virtual Workshop, National Academy of Engineering, online.
3. Virtual Talks by Fulbrighters Series, May 20/May 28, 2020, Fulbright Finland, online.
4. DOE Industrial Assessment Center Director's Meeting, July 17-19, 2019, Chicago, IL.
5. Clean Energy Smart Manufacturing Innovation Institute (CESMII) Member Meeting, February 28, 2018, University of California – Los Angeles, Los Angeles, CA.
6. Training: Sexual Harassment Training Workshop, May 9, 2018, Oregon State University, Corvallis, OR.
7. Training: Fundamentals of Program Assessment Workshop, ABET, April 14, 2018, San Diego, CA (*selected to represent the School of MIME*).
8. Training: Office of Naval Research Workshop (Dr. Reginald Williams), January 19, 2018, Oregon State University, Corvallis, OR.
9. Clean Energy Smart Manufacturing Innovation Institute (CESMII) Member Meeting, December 5-6, 2017, University of California – Los Angeles, Los Angeles, CA.
10. DOE Industrial Assessment Center Director's Meeting, June 22-23, 2017, New Orleans, LA.
11. Center for e-Design, Spring 2017 IAB Meeting, April 25-27, 2017, State College, PA.
12. Clean Energy Smart Manufacturing Innovation Institute (CESMII) Kick-off Event, February 22-23, 2017, Los Angeles, CA.
13. Training: Hearing All Voices Seminar, February 28, 2017, Oregon State University, Corvallis, OR.
14. Training: Search Advocate Training, October 2016, Oregon State University, Corvallis, OR.
15. DOE Advanced Manufacturing Office, Sustainable Manufacturing Workshop, January 6-7, 2016, Portland, OR.
16. Smart Manufacturing in the Pacific Northwest, September 21, 2015, Portland, OR.
17. NSF Smartgoods Manufacturing Workshop, May 14-15, 2015, Portland, OR.
18. Center for e-Design, Spring 2015 IAB Meeting, April 7-9, 2015, Portland, Oregon.
19. Training: Federal Agencies, Best Practices: Part 1, presented by Dr. Tom Dietterich, January 16, 2015, Oregon State University.
20. Exploring Possible Connections, Idaho National Labs, December 8-9, 2014, Oregon State University.
21. Clean Energy Manufacturing Initiative (CEMI) Western Regional Summit, U.S. Department of Energy, San Francisco, CA, April 17, 2014.
22. Training: NSF CAREER Workshops (Part 1: February 6, 2014 and Part 2: April 9, 2014), Oregon State University, Corvallis, OR.

23. Training: Navigating Federal Agencies and Target Opportunities, November 26, 2013, Oregon State University, Corvallis, OR.
24. Advanced Manufacturing Impact Forum, ASME 2013 International Mechanical Engineering Congress & Exposition, November 18, 2013, San Diego, CA.
25. Green Chemistry Agenda Development Forum, Oregon BEST, November 6, 2013, Oregon State University, Corvallis, OR.
26. Training: PhD Student Mentoring Workshop, Feb. 25, 2013, Oregon State University, Corvallis, OR.
27. Sustainable Textiles Symposium, May 14, 2012, Oregon State University, Corvallis, OR.
28. Training: Effective Practices for Teaching Hybrid (Blended) Courses, February 22, 2012, Oregon State University, Corvallis, OR.
29. Professional Science Master (PSM) in Renewable Energy Workshop, December 2, 2011, Oregon State University, Corvallis, OR.
30. 5th International Conference on Business & Sustainability, November 4-5, 2011, Portland, OR.
31. CO_2PE! Workshop, 17th CIRP International Conference on Life Cycle Engineering (LCE2010), May 19-21, 2010, Hefei, China. (Open to conference participants)
32. 2009 Micro Nano Breakthrough Conference, September 21-23, 2009, Portland, OR.
33. Oregon BEST FEST 2009, Portland State University, September 14, 2009, Portland, OR.
34. Guest Lecturer: "Sustainable Engineering," Engineering Orientation I (ENGR 111), November 30, 2009, Oregon State University, Corvallis, OR.
35. Guest Lecturer: "Manufacturing Engineering," Introduction to Industrial and Manufacturing Engineering (IE 285), November 16, 2009, Oregon State University, Corvallis, OR.
36. Guest Lecturer: "Life Cycle Analysis," Entrepreneurship, Innovation, and Supply Chain in Environmental Management (BA 567), May 15, 2009, Oregon State University, Corvallis, OR.
37. Wind Energy Technology Seminar (Part II), IEEE Industry Applications Society Professional Presentation (Steven W. Saylors, Vestas Americas), April 14, 2009, Portland, OR.
38. Greener Nano 2009, 4th Annual Greener Nanoscience Conference: Nanoscience for a Sustainable Future, March 2-3, 2009, Eugene, OR.
39. Education and Outreach Programs Directed at Diverse Students and Faculty, NSF Division of Undergraduate Education (Dr. L. Crumpton-Young, NSF), October 6, 2008, Houghton, MI.
40. Addressing the Social Dimension of Sustainability in Engineering Education Workshop, ASEE North Midwest Section Conference, September 20-22, 2007, Houghton, MI.
41. Training: SFI Orientation/Professional Development Week, August 2005, Houghton, MI.
42. 21st Annual Louisiana Remote Sensing & GIS Workshop, April 19-21, 2005, New Orleans, LA.
43. Training: SFI Orientation/Professional Development Week, August 2004, Houghton, MI.
44. Training: Sustainable Futures Institute Workshop, April 2004, Houghton, MI.
45. Training: Engineering for the Environment Education Workshop, January 2003, Houghton, MI.

46. Training: Water Treatment Seminar, July 2002, Melvindale, MI.
47. Training: Regs 101: Environmental Regulations, July 2002, Ann Arbor, MI.
48. Training: Pollution Prevention (P2) Training, Michigan Department of Environmental Quality, May 2002, Grand Rapids, MI.

C3. Grant and Contract Support ($8.1M of $28.7M)

Funded Projects: Oregon State University ($8.0M of $28.6M)

1. *As PI:* "Supporting Development of Onsite Energy in Northwest Industries and Communities," Washington State University (U.S. Department of Energy subaward), $180,000, 1/1/2024-12/31/2026, incoming.
2. *As co-PI:* "Collaborative Research: DESC: Type I: Software-Hardware Recycling and Repair Database Infrastructure (SHReDI) for Sustainable Computing," National Science Foundation, $350,000 (OSU PI: A. Natarajan; Partner: S. Behdad-U. Florida), 10/01/2023-09/30/2026.
3. *As PI:* "Oregon State University Industrial Assessment Center," U.S. Department of Energy, $2,250,000, (co-PI: B. Fronk), 10/01/2021-9/30/2026.
4. *As co-PI: "*Sustainably Incorporating a Hemp Biobased Economy into Western U.S. Regional Rural and Tribal Lands," U.S. Department of Agriculture, $424,792 of $10M (OSU PI: J. Steiner, OSU co-PIs: J. Antle, M. Bionaz, J. Chen, P.-H. Hsieh, P. Hughes, G. Jones, J. Leong, J. Noller, J. Reimer, R. Roseberg, C. Seavert, J. Simonsen, A. Sinkey, R. van Breemen, Z. Wu, R. Zemetra; UC Davis co-PIs: E.C. Brummer, D. Putnam; UN Reno co-PIs: S. Emm, M. Walia; WSU co-PIs: D. Gang, N. Rayapati; 7 Generations; Industrial Hemp Association of Washington), 10/01/2021-09/30/2026.
5. *As PI:* "ECR: PEER: Modular Educational Certification for Advancing Training Online through Industry Collaborations (MECHATRONIC)," National Science Foundation, (OSU co-PIs: Z. Fan, D. Kim, C. Sanchez; CCC co-PI: M. Mattson), $1,844,172, 1/1/2020-12/31/2024.
6. *As PI:* "CESMII Project Management for Budget Period 5," University of California-Los Angeles (DOE/CESMII), $65,000 (plus $65,000 cost share), (co-PI: Z. Fan), 02/01/2022-05/31/2024.
7. *As co-PI:* "OMI Project: Enhanced Automation for Food and Beverage Manufacturing Equipment," (PI: L. Goddick, co-PIs: Z. Fan, J. Parmigiani), $540,000 (Tillamook Creamery Association, $270,000; Oregon Metals Initiative, $270,000), 6/16/2023 - 6/30/2024.
8. *As co-PI:* "An Open Product Marketplace Orchestrator for Rapid-Response across (Rx) Health and Medical Supply and Demand Chains (Rx Product Marketplace Orchestrator)," US Department of Commerce (via Digital Manufacturing and Design Innovation Institute LLC), $1,192,149 (of $3,880,343), (MxD PI: F. Sciammarella; WSU co-PIs: K.Y. Kim; ISU co-PI: G. Kremer), 3/01/2022-2/29/2024.
9. *As PI:* "DOE Northwest Combined Heat and Power Technical Assistance Partnership (NW CHP TAP)," Washington State University, $35,347, (Former PI: B. Fronk), 11/01/2020-12/31/2023.

10. *As PI:* "Participant Support: 2023 Co-located International Advanced Manufacturing Conference (NAMRC/MSEC/LEM&P); New Brunswick, New Jersey; 12-16 June 2023," National Science Foundation, $49,600, 10/01/2022-9/30/2023.
11. *As PI:* "IAC Resilience Planning Tool," Pacific Northwest National Lab, $5000, 04/01/2023-08/31/2023.
12. *As co-PI*: "Smart Cutting Tool," OMIC R&D, $100,000 (PI: Z. Fan, co-PI: B. Sencer), 07/01/2022-06/30/2023.
13. *As co-PI:* "Investigation of Energy Efficient Drying Practices in the Pacific Northwest Hop Industry," Agricultural Research Foundation (PI: B. Fronk, co-PI: T. Shellhammer), $15,000, 02/02/2021-01/31/2023.
14. *As PI:* "Reduction of Energy Consumption in Brewing Hop Drying Using Smart Manufacturing," UCLA/CESMII, (former PI: B. Fronk; co-PI: T. Shellhammer; Partner: Ectron), $100,000 (plus $100,000 cost share), 06/15/2021-01/31/2023.
15. *As PI:* "Industrial Walk Through Checklist and Reference," Bonneville Power Administration, $74,500, (Former PIs: B. Fronk, J. Junker), 03/08/2021-09/30/2022.
16. *As PI:* "Real Time Efficiency Monitoring at Columbia Boulevard Wastewater Treatment Plant (CBWTP)," City of Portland, $23,047, (Former PI: B. Fronk), 7/01/2021-06/30/2022.
17. *As PI:* "CESMII Project Management for Budget Period 4," University of California-Los Angeles (DOE/CESMII), $50,000 (plus $50,000 cost share), (co-PI: J.D. Porter), 02/01/2021-01/31/2022.
18. *As PI:* "Oregon State University Industrial Assessment Center," (Former PI: J. Junker, co-PI: B. Fronk), U.S. Department of Energy, $1,968,750, 10/1/2016-12/31/2021.
19. *As co-PI:* "Modeling the Total Cost of Ownership for Scaling-Up via Modular Chemical Process Intensification," American Institute of Chemical Engineers (DOE RAPID), $225,000 (plus $117,000 cost share), (PI: B. Paul), 01/01/2019-12/31/2021.
20. *As PI:* "Manufacturing Resourcing Model," (co-PI: J.D. Porter), Lam Research Corp., $30,000, 02/01/2021-06/30/2021.
21. *As PI:* "CESMII WRMC Northern US Satellite Activities: Industry Workshop," University of California-Los Angeles (DOE/CESMII), $88,000 (plus $88,000 cost share), (co-PI: J.D. Porter), 08/01/2018-01/31/2021.
22. *As co-PI:* "OMI Project: Green Gear Lubrication Study and Test Execution, Phase 2," (PI: J. Parmigiani, co-PI: B. Isgor), $179,192 (Boeing, $89,596; Oregon Metals Initiative, $89,596), 01/06/2020-01/31/2021.
23. *As co-PI:* "OMI Project: RX-Wing Aircraft Lubrication Evaluation," (PI: J. Parmigiani, co-PI: B. Isgor), $110,000 (Boeing, $55,000; Oregon Metals Initiative, $55,000), 06/15/2019-12/31/2019.
24. *As PI:* "NIST-ASTM-NSF-ASME Workshop on Challenges in Representing Manufacturing Processes for Systemic Sustainability Assessments," National Science Foundation, $39,056, 4/1/2018-12/31/2019.

25. *As PI:* NSF INTERN Supplement to "Collaborative Research: Constructionism in Learning: Sustainable Life Cycle Engineering (CooL:SLiCE)," National Science Foundation, $44,018, 4/1/2018-8/31/2019.
26. *As PI:* "Collaborative Research: Constructionism in Learning: Sustainable Life Cycle Engineering (CooL:SLiCE)," National Science Foundation (Lead PI: K.Y. Kim, Wayne State; Collaborating PI: K. Jackson, Penn State), $736,579 (OSU: $245,690), 9/1/2014-8/31/2019.
27. *As PI:* "Cost and Environmental Impact Analysis for 3D Printing of Complex Metal Parts," OSU/HP Inc. Seed Grant, $20,000 (co-PI: B. Paul; HP PI: T. Etheridge), 01/01-06/30/2019.
28. *As PI:* "Information Model Composability and Extendibility to Support Automated Sustainable Manufacturing System Assessment," National Institute of Standards and Technology, $160,070, 9/1/2016-6/30/2019.
29. *As PI:* "OMI Project: A Rapid Design and Manufacturing Analysis Tool for Production using the Blank Factory Concept (Phase 4)," (co-PIs: M. Campbell, D. Kim), $195,071 (Boeing, $97,536; Oregon Metals Initiative, $97,536), 9/16/2017-12/31/2018.
30. *As co-PI:* "Thermal Performance Evaluation of a Solar/Gas Hybrid Water Heating System," (with co-PI: B. Fronk and M.S. student S. Karki), U.S. Department of Energy, $25,000 (Special Project under the Industrial Assessment Center program), 9/16/2017-6/30/2018.
31. *As co-PI:* "Construction of Efficient, Cost-Effective and Sustainable Maintenance Facilities," Oregon Department of Transportation, (PI: J. Ideker), $145,000, 10/26/2015-3/31/2018.
32. *As co-PI:* "Acquisition of FORMLABS FORM2 Stereolithography 3D Printer," (PI: S. Pasebani, co-PIs: B. Jensen, B. Bay), OSU School of MIME Strategic Excellence Initiative, $7,000, Fall 2017.
33. *As PI:* "OMI Project: A Rapid Design and Manufacturing Analysis Tool for Production using the Blank Factory Concept (Phase 3)," (co-PIs: M. Campbell, D. Kim), $196,356 (Boeing, $98,178; Oregon Metals Initiative, $98,178), 8/1/2016-8/11/2017.
34. *As PI*: "A Standard Framework for Composable Information Flow Modeling to Characterize the Sustainability of Product Manufacturing," National Institute of Standards and Technology (NIST), $174,995, 1/1/2015-6/30/2017.
35. *As co-PI:* "Smart Grinding Testbed for Clean Energy Manufacturing," (PI: Z. Fan, co-PIs: J.D. Porter, B. Sencer), OSU School of MIME Strategic Excellence Initiative, $5,000, Winter 2017.
36. *As co-PI:* "SolarBag® Plus: High Performance Photocatalyst for Purifying Drinking Water," Oregon Nanoscience and Microtechnologies Institute, (PI: T. Radnieki, co-PI: H. McKenna, Puralytics), $238,104, 01/01/2016-12/31/2016.
37. *As co-PI:* "Metal 3D Printer," (PI: S. Pasebani, co-PIs: Z. Fan, R. Malhotra), OSU School of MIME Strategic Excellence Initiative, $10,000, Fall 2016.
38. *As PI:* "Assessing the Learning Gains of Manufacturing Students in an Integrated Hands-On Curriculum," Wayne State University (National Science Foundation subawardee), $16,388 (2 yrs.), 09/01/2014-06/31/2016.

39. *As co-PI*: "Transforming Engineering Culture to Advance Inclusion and Diversity (TECAID) Program for U.S. Mechanical Engineering Departments," Purdue University (NSF subaward), (PI: K. Sharp, co-PIs: B. Gibbons, E. Momsen, R. Stone), $16,000, 3/1/2015-8/31/2016.
40. *As PI:* "OMI Project: Achieving Rapid Configuration Generation and Cost-Competitive Production using the Blank Factory Concept," (co-PI: M. Campbell, co-PI: D. Kim), $185,370 (The Boeing Company, $92,685, Oregon Metals Initiative, $92,685), 8/1/2015-7/31/2016.
41. *As PI:* "Analysis Tool and Guide for Energy Modeling of Additive Manufacturing," U.S. Department of Energy (IAC Funding to Support Research for Junior Faculty), $60,000, 7/1/2015-6/30/2016.
42. *As PI:* "An Educational Module for Sustainable Additive Manufacturing," CACHE Corp. (via NSF-funded Sustainable Manufacturing Advances in Research and Technology (SMART) Coordination Network), $4,000, 01/01/2016-6/30/2016.
43. *As co-PI:* "OMI Project: Experimental Investigation of Sustainable Electric-Hot-Grinding," (PI: R. Malhotra), $194,200 (Benchmade Knife Co., $23,205; Blount International, $73,894; Oregon Metals Initiative, $97,100), 10/1/2014-1/15/2016.
44. *As PI*: "Development and Delivery of Training for Sustainable Engineering in the Energy Sector," Portland General Electric, (co-PI: J. Calvo), $12,789 (gift), 01/01-12/31/2015.
45. *As PI:* "OMI Project: Defining a Path toward the Blank Factory Concept," (co-PI: M. Campbell, co-PI: D. Kim), $126,316 (The Boeing Company, $63,158, Oregon Metals Initiative, $63,158), 10/1/2014-6/30/2015.
46. *As co-PI:* "OMI Project: Development and Implementation of a Level Pull System," (PI: J. Calvo), $12,379 (Sheldon Manufacturing Inc., $6,190, Oregon Metals Initiative, $6,190), 10/1/2014-3/31/2015.
47. *As Senior Person:* "I/UCRC: IT-Enabled Design and Realization of Engineered Products and Systems," (PI: R. Stone, co-PI: I. Tumer), National Science Foundation, $60,000 (1 yr.), awarded April 2014.
48. *As PI:* "Exploring Sustainable Process Capability Windows for a New Electrically-Assisted-Machining (EAM) Process," (co-PI: R. Malhotra), OSU General Research Fund, $9,660, submitted October 15, 2013, awarded November 21, 2013.
49. *As PI:* "Standard Methods for Sustainable Assembly in Aerospace Manufacturing," National Institute of Standards and Technology, $50,000, submitted February 26 2013, awarded September 2013, 2/1/2013-12/31/2013.
50. *As co-PI:* "OMI Project: Using Process and System Modeling to Understand Manufacturing Costs, Part 1," (PI: J. Calvo), $24,000 (Sheldon Manufacturing Inc., $12,000, Oregon Metals Initiative, $12,000), awarded July 2013, 10/01/2013-06/31/2014.
51. *As PI:* "OMI Project: A Sustainability Assessment Method and Tool for Metal Aircraft Component Manufacturing and Assembly (Phase 3)," $100,000 (The Boeing Company, $50,000, Oregon Metals Initiative, $50,000), awarded July 2013, 10/01/2013-06/31/2014.
52. *As PI:* "Toxicological Performance of Metalworking Nanofluids," $4,000 (gift), Master Chemical Corp., received April 2013.

53. *As Senior Person:* "Planning Grant: I/UCRC for e-Design: IT Enabled Design and Realization of Engineered Products and Systems," (PI: I. Tumer, co-PI: R. Stone), National Science Foundation, $14,380 (1 yr.), awarded March 2013.
54. *As PI:* "Redox Flow Battery Cost Model Development (Phase 1)," (co-PI, B.K. Paul), Pacific Northwest National Laboratory, $59,871, 2/5/2013-09/30/2013.
55. *As co-PI:* "IT Aire / Gresham City Hall Data Room Cooling Project," (PI: J. Junker), Oregon BEST Commercialization Grant, $101,040 (1 yr.), awarded February 2013.
56. *As co-PI:* "Pan-American Advanced Studies Institute (PASI) on Manufacturing Innovation through Sustainable Design," (Dr. R. Chinnam, PI Wayne State; Drs. G. Okuden Kremer and I. Esparragoza, co-PIs Penn State), National Science Foundation, $99,990, 1/2013-8/2013.
57. *As PI:* "OMI Project: Development of a Sustainability Assessment Method and Tool for Metal Aircraft Components Manufacturing and Assembly (Phase 2)," The Boeing Company and Oregon Metals Initiative, $92,646 (OMI: $41,715; Boeing: $50,931, 07/2012-06/2013.
58. *As PI:* "Non-Destructive Testing of Wood Products," $400 (gift), Coyle Treepieces, October 2012.
59. *As PI:* "Sustainable Product Development Collaboratory," Oregon State University International Programs Faculty Grant, $2,018, submitted December, 2011, awarded January 25, 2012.
60. *As Key Personnel:* "Oregon State University Industrial Assessment Center (OSU IAC)," (PI: G. Wheeler; co-PI: J. Junker; Key Personnel: J. Zaworski, R. Feuerbacher, K. Poppa), Oregon BEST, $35,000 (Haapala: $35,000), matching funds for graduate student support on U.S. DOE project, awarded September 2011.
61. *As Key Personnel:* "Oregon State University Industrial Assessment Center (OSU IAC)," (PI: G. Wheeler; co-PI: J. Junker; Key Personnel: J. Zaworski, R. Feuerbacher, K. Poppa), U.S. Department of Energy, $1,751,959 (Haapala: $250,000), 5 years, submitted August 2, 2011, awarded September 2011.
62. *As PI:* "Life Cycle Analysis: Sustainable Manufacturing and Supply Chains (BA/IE 5xx/4xx)," Oregon State University COB/COE Seed Grant, $10,000 (Haapala: $5,000), 5/2011-12/2013.
63. *As PI:* "CI-TEAM Demonstration Project: Collaborative Research: A Sustainable Product Development Collaboratory," (Dr. K.-Y. Kim, et al. Wayne State (lead) and Dr. G.E. Okuden Kremer, Penn State), National Science Foundation, OSU: $64,940 (2 yrs., of a total of $250,000 to three universities), 10/2010-9/2012.
64. *As Senior Personnel:* "Task 2.1: Identification of Alternative Manufacturing Strategies" in "FY 2010 Tactical Energy Systems Development," (Dr. R. Peterson, PI and Dr. B. K. Paul, co-PI), U.S. Army CERDEC, $1,079,659 (Haapala: $61,495 of Task 2: $313,372), 10/2010-3/2012.
65. *As PI:* "OMI Project: Development of a Sustainability Assessment Method for Fabrication of Metal Aircraft Components," The Boeing Company and Oregon Metals Initiative, $102,000, 10/2010-9/2011.
66. *As PI:* "Manufacturing Engineering Educational Laboratory: Automated Manufacturing System Upgrade," OSU Technology Resource Fee (TRF), $3,800, 9/2010-8/2011.

67. *As PI:* "Development of a Unit Process Life Cycle Inventory," Wichita State University (U.S. DOE subaward), $8,031, 12/2010-6/2011.
68. *As PI:* "OMI Project: Development and Application of a Metal Cutting Tool Selection Procedure," (Dr. D. Kim, co-PI), Benchmade Knife Company and Oregon Metals Initiative, $30,000 (Haapala: $15,000), 10/2010-6/2011.
69. *As PI:* "OMI Project: Development of a Knife Testing Device," Benchmade Knife Company and Oregon Metals Initiative, $20,000, 10/2010-6/2011.

Funded Projects: Michigan Technological University (Total: $117,730 of $141,311)

1. *As co-PI:* "Environmental Performance of Manufacturing Operations," Dr. J. W. Sutherland (PI, MTU), Caterpillar Inc., $141,311 (Haapala: $117,730), 4 years, submitted October 2005, awarded November 2005.

C3.1. Donations

Year	*Source*	*Donation*	*Approx. Value*
2010	Master Chemical Corp.	Cutting fluid for research	$188
2010	Boeing	Titanium bars for research	$600
2012	Coyle Treepieces	Gift to study non-destructive testing methods for wood products	$400
2010	Boeing	Cutting tools for research	$780
2013	Master Chemical Corp.	Cutting fluid for research	$43
2013	Master Chemical Corp.	Gift to support research into toxicological performance of metalworking fluids	$4,000
2013-2014	MiSUMi	Materials (PEEK) for electrically-assisted machining research	$370
2014	Performance Design, LLC	Milling vise (used Kurt DL-400), aluminum stock material for research	$500
2014	System Insights	High speed power monitor (HSPM) and three current transducers (CT) for machine tool energy monitoring	$1000
2015	Portland General Electric	Gift to support study of sustainable engineering training in the energy sector (received along with Prof. J. Calvo)	$12,789

D. SERVICE

D1. University Service

Oregon State University (OSU)

- Member, College of Agricultural Sciences Faculty Search Committee, Sustainable Food Packaging, Fall 2023-current
- Participant, Bridging the Gap from Education to Employment (BGEE) Career Champions Inaugural Cohort, Summer-Fall 2020
- Mentor, Inaugural Faculty-Student Mentor Program, 2018-2019
- Graduate Council Representative, Service on various M.S. and Ph.D. committees, 2010-present
- Member, College of Forestry Faculty Search Committee, Advanced Wood Manufacturing, Spring 2018-Fall 2018

OSU College of Engineering

- Member, COE Office of Faculty Development, Diversity & Inclusion Team, 2016-2019
- Member, Search Committee, Associate Dean for Faculty Advancement, Winter 2018
- Mentor, Saturday Academy Apprenticeships in Science and Engineering, High School Internships, Summers of 2012, 2015-2017
- Member, Bioenergy Minor Curriculum Committee, Fall 2011

OSU School of Mechanical, Industrial and Manufacturing Engineering (MIME)

- Research Coordinator (Area Lead), Advanced Manufacturing, 2017-2019; 2020-present
- Program Coordinator, B.S. Manufacturing Engineering, Winter 2009-Spring 2019; 2020-present
- Faculty Advisor, Society of Manufacturing Engineers (Chapter S019), 2009-2019; 2020-present
- Coordinator, Manufacturing Engineering Educational Laboratory, Summer 2009-present
- Member, Graduate Faculty, Industrial Engineering, Winter 2009-present; Mechanical Engineering, Winter 2009-present; Materials Science, Summer 2014-present
- Chair, Manufacturing/Mechatronics Research Associate Search Committee, Fall 2023-present
- Member, Faculty Search Committee, Advanced Manufacturing, 2022-2023
- Member, Faculty Search Committee, Advanced Manufacturing, 2021-2022
- Member, Manufacturing /Mechatronics Instructor Search Committee, Summer 2021, 2021-2022
- Member, Mechanical Engineering Undergraduate Program Committee (UPC), 2020-2022
- Chair, Manufacturing/Mechatronics Research Associate Search Committee, 2020-2021
- Chair, Manufacturing/Mechatronics Instructor Search Committee, Fall 2020
- Member, Industrial & Manufacturing Engineering Undergraduate Program Committee (UPC), Winter 2009-Spring 2019
- Member, Promotion & Tenure Subcommittee (Mid-tenure Case), 2018-2019
- Member, Mechanical Engineering Graduate Program Committee (GPC), Fall 2018
- Member (representing IME and junior faculty), NSF TECAID (Transforming Engineering Culture to Advance Inclusion and Diversity) Project Team, 2015-2017
- Organizer, Manufacturing Day Event at OSU ATAMI facility, October 2016, October 2017
- Member, Promotion & Tenure Subcommittee (Mid-tenure Case), 2016-2017
- Chair, Faculty Search Committee, Materials Science, 2016-2017
- Member, Promotion & Tenure Subcommittee (Tenure Case), 2016-2017
- Member, Faculty Search Committee (Assistant Professor-Senior Research), Fall 2016
- Member, Safety Committee, Fall 2009-Summer 2016
- Member, Faculty Search Committee, Advanced Manufacturing, 2015-2016

- Member, School Head Search Committee, 2015-2016
- Chair, Laboratory Instructor Search Committee, 2015-2016
- Mock Interviewer for OSU SME club-organized event, January 2016
- Member, Ad Hoc Committee on Voting, Spring 2015
- Liaison, Industrial & Manufacturing Engineering Graduate Program Committee (GPC), Nano/Micro-manufacturing, 2012-2013; Advanced Manufacturing, 2013-2014
- Faculty Search Committee (Chair, Advanced Manufacturing Subcommittee), 2013-2014
- Member, Faculty Search Committee, Advanced Manufacturing, 2012-2013
- Faculty Advisor, Surface Mount Technology Association (OSU Student Chapter), 2012-2013
- Faculty Assistant, MECOP Interview and Placement Events, Winter: 2011; Spring: 2011, 2013
- Member, Aerospace Option Ad Hoc Curriculum Committee, Spring 2012-Fall 2013
- IME Faculty Representative, Beaver Open House, Fall 2009, Fall 2010, Fall 2011
- Co-coordinator (with R. Peterson), Energy & Sustainability Research Cluster, Sp 2009, 2010-11
- Member, Search Committee, Machining/Product Realization Lab Manager, Spring 2011
- Co-coordinator (with R. Albertani), Composites Laboratory, 2009-2011

Michigan Technological University

Sustainable Futures Institute

- Coordinated Restructuring of the Graduate Certificate in Sustainability, 2007-2008
- Co-organizer of Orientation/Professional Development Week, August 2004
- Co-organizer of Sustainable Futures Day, April 2004

Department and Project Leadership

- Secretary, OSU Graduate Student Council, 2007-2008
- At-large Member, OSU Graduate Student Council, 2003-2007
- Vice President/University Senate Liaison, OSU Graduate Student Council, 2002-2003
- Member, Graduate Student Mentor Awards Committee, 2002-2003
- Member, Student Advisory Committee for the Department of Mechanical Eng.-Eng. Mechanics (Co-organized ME-EM Open House/Lab Tour), 2002-2003
- Treasurer (2000-2001), Michigan Tech FutureTruck, Enterprise Design Team, 2000-2001
- Treasurer (1999-2000), Michigan Tech FutureCar, Body Team, 1997-2000

D2. Service to the Profession

D2.1. Journals Editorships

- Associate Editor, *ASTM Journal of Smart and Sustainable Manufacturing Systems*, 2015-present
- Editorial Board Member, *International Journal of Sustainable Engineering*, 2022-present
- Editorial Board Member, *SME Manufacturing Letters*, 2020-present
- Editorial Board Member, *AIChE Journal of Advanced Manufacturing and Processing*, 2018-present
- Guest Editor, *ASME Journal of Manufacturing Science and Engineering and Journal of Mechanical Design*, Special Issue on Advances in Design and Manufacturing for Sustainability, Co-editors: M. Banu, S. Behdad, D. Cooper, C. Hu, H. Kim, A. Layton, B. Linke, J. Zhang, 2023.
- Associate Editor, *ASME Journal of Manufacturing Science and Engineering*, 2016-2022

- Guest Editor, *Sustainability*, Special Issue on Sustainable Product Design and Manufacturing, Co-editors: L. Li, E. Yang, S. Hallstedt, 2020-2021
- Guest Editor, *ASME Journal of Manufacturing Science and Engineering*, Special Issue on Sustainable Life Cycle Engineering, Co-editors: S. Behdad and W.Z. Bernstein, 2018
- Guest Editor, *ASME Journal of Manufacturing Science and Engineering*, Special Issue on Sustainable Manufacturing, Co-editors: D.A. Dornfeld, M. Helu, and J. Arinez, 2016

D2.2. Conference and Workshop Organization

American Society of Mechanical Engineers (ASME) Conference Organization

- *Travel Award Coordinator (2022-2023)*, *Manufacturing Science and Engineering Conference*, ASME Manufacturing Engineering Division (MED)
- *Early Career Forum Organizer (2021-2022)*, *Manufacturing Science and Engineering Conference*, ASME Manufacturing Engineering Division (MED)
- *Technical Program Chair (2020-2021)*, *Manufacturing Science and Engineering Conference*, ASME Manufacturing Engineering Division (MED)
- *Symposium Co-Organizer*, Inaugural Doctoral Symposium, 2021 ASME Manufacturing Science & Engineering Conference (MSEC), June 22-25, University of Cincinnati, Online (w/ Y. Chen).
- *Technical Program Co-chair (2019-2020)*, *Manufacturing Science and Engineering Conference*, ASME Manufacturing Engineering Division (MED)
- *Conference Chair (2014-2015)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Program Chair (2013-2014)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Special Session Chair, Program Co-Chair (2012-2013)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Symposium Co-Organizer*, "Advances in Reusable Abstractions for Manufacturing Process and Unit Process Life Cycle Inventories," 2019 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-14, Erie, PA (with K.C. Morris, W.Z. Bernstein, and B.S. Linke).
- *Review Coordinator*, "Design for Manufacturing and Assembly," 23rd Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2018 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 26-29, 2018, Quebec City, Canada.
- *Symposium Co-Organizer*, "Reusable Abstractions of Manufacturing Processes (RAMP)," 2018 ASME Manufacturing Science & Engineering Conference (MSEC), June 18-22, College Station, TX (with K.C. Morris, W.Z. Bernstein, F. Zhao, and B.S. Linke).
- *Symposium Co-Organizer*, "Manufacturing Process Characterization for System Level Sustainability Assessment," 2017 ASME Manufacturing Science & Engineering Conference (MSEC), June 4-8, Los Angeles, CA (with M. Mani, K.C. Morris, K.W. Lyons, and B.S. Linke).
- *Review Co-Coordinator*, "Design for Manufacturing and Assembly," 21st Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2016 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 21-24, 2016, Charlotte, NC (with J. Summers).
- *Symposium Co-Organizer*, "Sustainable Manufacturing Technologies and Practices," 2015 ASME Manufacturing Science & Engineering Conference (MSEC), June 8-12, Charlotte, NC (with C. Yuan and C. Schoonenberg).

- *Symposium Co-Organizer*, "Sustainable Manufacturing for Emerging Technologies," 2014 ASME Manufacturing Science & Engineering Conference (MSEC), June 9-13, Detroit, MI (with C. Yuan, M. Hutchins, and K. Walzcak).
- *Panel Co-Organizer*, "Global Trends in Manufacturing (Panel Session)," 18th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, 2013, Portland, OR (with J. Mason).
- *Review Coordinator*, "Design for Supply Chain," 18th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, 2013, Portland, OR.
- *Symposium Organizer*, "Sustainable Manufacturing for Emerging Technologies," 2013 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-13, University of Wisconsin, Madison, WI (with B.S. Linke and W. Zhang).
- *Track Chair*, "Track 4: Sustainable Manufacturing," 2013 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-13, University of Wisconsin, Madison, WI.
- *Session Co-Organizer*, "System-wide Impacts of the Energy-Water Nexus," 2011 ASME International Mechanical Engineering Congress and Exposition (IMECE), November 11-17, Denver, CO.
- *Track Co-Organizer*, "Sustainable Design and Manufacturing," 2012 ASME/ISCIE International Symposium on Flexible Automation (ISFA), June 18-20, St. Louis, MO (with F. Zhao and J.W. Sutherland).
- *Symposium Organizer*, "Sustainable Manufacturing Processes and Systems," 2012 ASME Manufacturing Science & Engineering Conference (MSEC), June 4-8, South Bend, IN (with Y. Yuan, W. Zhang, and H.C. Zhang).
- *Track Co-Chair*, "Track 4: Sustainable Manufacturing," 2012 ASME Manufacturing Science & Engineering Conference (MSEC), June 4-8, South Bend, IN (with J.A. Camelio).
- *Review Co-Coordinator*, "Sustainable Design," 16th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2011 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 28-31, Washington, D.C.
- *Symposium Organizer*, "Sustainable Nanomanufacturing," 2011 ASME Manufacturing Science & Engineering Conference (MSEC), June 13-17, 2011, Corvallis, OR (with W. Zhang).
- *Symposium Organizer*, "Sustainable Nanomanufacturing," 2010 ASME Manufacturing Science & Engineering Conference (MSEC), October 12-15, Erie, PA (with B.K. Paul, and W. Zhang).
- *Review Coordinator*, "Manufacturing Cost Estimation and Total Cost of Ownership," 15th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2010 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 15-18, Montreal, Quebec.
- *Topic Organizer and Review Coordinator*, "DFMLC-5: Environmental Analysis of Emerging Technologies," 15th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2010 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 15-18, Montreal, Quebec.

Other Conferences

- *Track Chair (2023-2024)*, "Track 7: Sustainable Manufacturing," SME North American Manufacturing Research Institute (SME NAMRI); Co-Chairs: N. Diaz Elsayed, S. Rakurty.
- *Track Co-Chair (2022-2023)*, "Track 7: Sustainable Manufacturing," SME North American Manufacturing Research Institute (SME NAMRI); Chair: S.C. Feng, Co-Chair: I.S. Jawahir.
- *Special Session Organizer*, "Enabling Technologies toward Cyber-Based Product Customization," 31st Flexible Automation and Intelligent Manufacturing (FAIM 2022) International Conference, June 19-23, Detroit, MI (with K.-Y. Kim, G. Koenig, and G. Kremer)

D2.3. Conference Program Committees

American Society of Mechanical Engineers (ASME) Conferences

- *Session Chair/Co-Chair*, "Doctoral Symposia I-III," 2021 ASME Manufacturing Science & Engineering Conference (MSEC), June 22-25, University of Cincinnati, Online (with Y. Chen).
- *Session Chair*, "Poster Session- Modeling & Welding," 2021 ASME Manufacturing Science & Engineering Conference (MSEC), June 22-25, University of Cincinnati, Online.
- *Session Chair*, "Sustainable Design and Manufacturing II," 23rd Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2018 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 26-29, Quebec City, Canada.
- *Session Chair*, "Design for Manufacturing and Assembly," 21st Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2016 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 21-24, Charlotte, NC.
- *Session Chair*, "Dornfeld Symposium 8 - Sustainable Mfg. 3," 2016 ASME Manufacturing Science & Engineering Conference (MSEC), June 27-July 1, Blacksburg, VA.
- *Session Chair*, "Industrial Energy Efficiency," 2015 ASME Manufacturing Science & Engineering Conference (MSEC), June 8-12, Charlotte, NC.
- *Session Chair*, "Design for Supply Chain," 19th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2014 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 17-20, Buffalo, NY.
- *Session Chair*, "Value Chain Management for Sustainability," 18th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2013 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 4-7, Portland, OR.
- *Session Co-Chair*, "Sustainable Manufacturing Technologies," 2013 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-13, University of Wisconsin, Madison, WI.
- *Session Chair*, "Sustainable Manufacturing Processes," 2013 ASME Manufacturing Science & Engineering Conference (MSEC), June 10-13, University of Wisconsin, Madison, WI.
- *Session Chair*, "Design for Supply Chain," 17th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2012 International Design Engineering Technical Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 15-18, Chicago, IL.
- *Session Co-Chair*, "Life Cycle Decision Making II," 16th Design for Manufacturing and the Lifecycle Conference (DFMLC), ASME 2011 International Design Engineering Technical

Conferences (IDETC) and Computers and Information in Engineering Conference (CIE), August 28-31, Washington, D.C.
- *Session Chair*, "Sustainable Nanomanufacturing," 2010 ASME Manufacturing Science & Engineering Conference (MSEC), October 12-15, Erie, PA.
- *Session Chair*, "Sustainable Manufacturing Processes – II," 2009 ASME Manufacturing Science & Engineering Conference (MSEC), October 4-7, West Lafayette, IN.
- *Session Co-Chair*, Japan-USA Symposium on Flexible Automation, July 19-21, 2004, Denver, CO.

Society of Manufacturing Engineers (SME) Conferences
- *Session Chair*, "Sustainable Manufacturing 3" 51st Annual SME North American Manufacturing Research Conference (NAMRC), June 12-16, 2023, New Brunswick, NJ.
- *Session Co-Chair*, "Sustainable Manufacturing 1," 39th Annual SME North American Manufacturing Research Conference (NAMRC), June 13-17, 2011, Corvallis, OR.
- *Conference Host Committee Co-Chair*, 39th Annual SME North American Manufacturing Research Conference (NAMRC), June 13-17, 2011, Corvallis, OR.
- *Session Co-Chair*, "Manufacturing Systems 3," 37th Annual SME North American Manufacturing Research Conference (NAMRC), May 19-22, 2009, Greenville, SC.

International Academy of Production Research (CIRP) Conferences
- *Scientific Committee*, CIRP Conference on Life Cycle Engineering (2012-2023)
- *Scientific Committee*, Global Conference on Sustainable Manufacturing (2018-2019, 2023)
- *Session Chair*, 26th CIRP Conference on Life Cycle Engineering, May 6-9, 2019, Purdue University, West Lafayette, IN, USA.
- *Session Chair*, Methods and Tools for Sustainability in Processes (I), 19th CIRP Conference on Life Cycle Engineering, May 23-25, 2012, University of California at Berkeley, CA, USA.
- *Workshop Team*, Unit Process Life Cycle Inventories CO_2PE!-UPLCI Workshop, 19th CIRP Conference on Life Cycle Engineering, May 23-25, 2012, University of California at Berkeley, CA, USA.
- *Session Chair*, B1: Energy Saving Product Development, 17th CIRP Conference on Life Cycle Engineering, May 19-21, 2010, Hefei, China.

Other Conferences
- *Scientific Committee*, Flexible Automation and Intelligent Manufacturing (FAIM) International Conference (2022)
- *International Program Committee Member*, International Conference on Industry 4.0 and Advanced Manufacturing (I-4AM), India (2019, 2022).
- *Scientific Committee*, International [avniR] LCA Conference, Lille, France (2012-2014)

D2.4. Reviewing

Books and Book Proposals Reviewed
- *eBook Proposal*, Bentham Science Publishers (2020) – Waste Valorization
- *Book Proposal*, Elsevier (2018) – Advanced Manufacturing (vol. on Sustainable Manufacturing)
- *Educational Reviewer*, "Geometric Dimensioning and Tolerancing," by David A. Madsen and David P. Madsen, Goodheart-Willcox, 2016.

Journals Reviewed

- Additive Manufacturing (2020)
- Chemical Engineering Journal (2013)
- Clean Technologies and Environmental Policy (2023)
- Computers in Industry (2020)
- Design Science (2018-2019)
- Ecological Indicators (2015-2016)
- Energy Efficiency (2011)
- Environmental Impact Assessment Review (2014)
- Frontiers in Energy Research (2016)
- Green Manufacturing Open (2024)
- International Journal of Advanced Manufacturing Technology (2013-2017)
- International Journal of Computing and Information Science in Engineering (2016)
- International Journal of Life Cycle Assessment (2014, 2017, 2023)
- International Journal of Manufacturing Research (2019)
- International Journal of Product Life Cycle Management (2009)
- International Journal of Production Research (2008, 2013-2014)
- International Journal of Strategic Engineering Asset Management (2013)
- International Journal of Sustainable Engineering (2017, 2021)
- International Journal of Sustainable Manufacturing (2015)
- Journal of Advanced Manufacturing and Processing (2019, 2022)
- Journal of Cleaner Production (2012-2017, 2019-2021, 2023-2024)
- Journal of Industrial Ecology (2019, 2020, 2022)
- Journal of Intelligent Materials Systems and Structures (2004)
- Journal of Manufacturing Processes, SME (2018-2019)
- Journal of Manufacturing Science and Engineering, ASME (2004, 2011, 2013-2016, 2023)
- Journal of Manufacturing Science and Technology, CIRP (2014, 2019, 2022)
- Journal of Manufacturing Systems, SME (2006, 2012, 2015, 2021, 2023)
- Journal of Mechanical Design, ASME (2009, 2013-2016, 2018-2019)
- Journal of Renewable and Sustainable Energy (2011)
- Journal of Smart and Sustainable Manufacturing Systems, ASTM (2019)
- Journal of STEM Education: Innovations and Research (2010)
- Manufacturing Letters, SME (2018, 2021-2024)
- MethodsX (2020)
- Polish Journal of Environmental Studies (2011)
- Resources, Conservation & Recycling (2010, 2017)
- Resources, Conservation & Recycling Advances (2022)
- Sustainability (2010)
- Sustainable Production and Consumption (2017-2018, 2020, 2022)
- World Journal of Engineering & Physical Sciences (2014)

Conference Articles/Abstracts Reviewed

- ASME International Design Engineering Technical Conferences (2010-2018, 2021-2023)
- ASME International Symposium on Flexible Automation (2006)
- ASME Manufacturing Science and Engineering Conference (2009-2019, 2022-2024)
- CIRP Conference on Manufacturing Systems (2022)

- CIRP Global Conference on Sustainable Manufacturing (2018-2019, 2022-2023)
- CIRP International Conference on Life Cycle Engineering (2010, 2012, 2014-2023)
- IIE Industrial Engineering Research Conference (2011-2012)
- INEER International Conference on Engineering Education (2007)
- International Conference on Agile Manufacturing (2007)
- International Conference on Flexible Automation and Intelligent Manufacturing (2021-2023)
- International Conference on Industry 4.0 and Advanced Manufacturing (2019, 2022, 2024)
- SME North American Research Conference (2005-2020, 2023-2024)
- [avniR] LCA Conference (2012-2014)

National Science Foundation Panel Reviews
- NSF/CBET Environmental Sustainability (2020)
- NSF/CMMI Manufacturing Machines and Equipment Program (2009, 2014-2016)
- NSF/DUE (2014)
- NSF/EPA Networks for Characterizing Chemical Life Cycle (2013)
- NSF SBIR/STTR Program (2013, 2021)

Other Reviews
- *Reviewer*, Science Foundation Ireland, Frontiers for the Future Partnership Programme, 2022
- *External Reviewer*, National Institute for Standards and Technology Editorial and Review Board (NIST ERB), 2013.
- *External Examiner*, Ph.D. Dissertation, University of New South Wales, November 2018.
- *Report Reviewer,* "HT 2 Induction Hardening, Unit Process Life Cycle Inventory," by Eric Vozzola, Michael Overcash, Evan Griffing, 2016.
- *Reviewer,* Structural Engineering Institute, Sustainability Committee, Carbon Working Group, 2012.
- *Beta Reviewer,* SME Sustainable Manufacturing Information Service (SMIS) Project, 2010.

D2.5. Other

American Society of Mechanical Engineers (ASME)
- *Reviewer*, Best Paper Award, ASME Manufacturing Science and Engineering Conference (2022)
- *Past Chair (2018-2020)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Chair (2017-2018)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Vice Chair (2016-2017)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Secretary (2015-2016)*, *Design for Manufacturing and the Life Cycle Engineering Technical Committee*, ASME Design Engineering Division (DED)
- *Chair (2011-2013), Life Cycle Engineering Technical Committee*, ASME Manufacturing Engineering Division (MED). Led MED state of the art journal paper.
- *Vice Chair (2010-2011), Life Cycle Engineering Technical Committee*, 2010-2011, ASME Manufacturing Engineering Division (MED). Led MED state of the art conference paper.

Society of Manufacturing Engineers (SME)

- *Faculty Co-advisor*, Oregon State University Student Chapter (S019), Fall 2020-present
- *Faculty Advisor*, Oregon State University Student Chapter (S019), Fall 2009-Spring 2019
- *Member*, SME NAMRI (North American Manufacturing Research Institute), 2002-present
- *Member,* Chapter Enhancement Committee, 12/2020-12/2022
- *Chair (Appointed by Member Council Chair)*, Student Relations Committee, 12/2018-12/2020
- *Member,* Distinguished Faculty Advisor Award Selection Committee, 2019
- *Member* (Appointed by SME President), Member Council (MC Liaison to the Student Relations Committee), 08/2017-12/2018

Other Service to the Profession

- *Pre-selection Committee Member*, 2021-22 ASLA-Fulbright Grants for Junior Scholars grant program, Fulbright Finland, 2021
- *Workshop Organizer*, Democratization through Digitalization: Prospects for Flexibly Redeploying Manufacturing Resources and the Industrial Workforce, SDPS 2020, 25th Anniversary - First Online Conference, November 18-20, 2020.
- *IISE Best Student Paper Review Committee*, for the IISE Annual Conference & Expo 2020, New Orleans, LA, May 30-June 2, 2020.
- *Student Poster Competition Judge*, RAMP (Reusable Abstractions of Manufacturing Processes) Workshop Poster Session, College Station, TX, June 2018.
- *Task Group Member*, ASTM WK35705: Sustainability Characterization of Manufacturing Processes, ASTM Subcommittee E60.13 on Sustainable Manufacturing, 2014-present.
- *Presentation Judge*, National Institute for Standards and Technology (NIST) RAMP (Reusable Abstractions of Manufacturing Processes) Challenge, June 2017.
- *IESP Pre-doctoral Fellowship Proposal Reviewer*, University of Illinois-Chicago, 2015.
- *Student Poster Competition Judge*, 4th International Forum on Sustainable Manufacturing at the University of Kentucky, September 12, 2014, Lexington, KY.
- *Organizing Committee*, U.S. National Science Foundation (NSF) Pan-American Advanced Studies Institute (PASI) on Manufacturing Innovation through Sustainable Design, July 14-27, 2013, Barranquilla, Colombia.

D3. Service to the Public

D3.1. Professionally Related

- *Member*, Advisory Group, Clean Industry Assessment and Roadmap, City of Portland, February-June 2023.
- *Member*, Technical Advisory Panel, Office of the CTO, Lam Research, October 2022.
- *High School Student Mentor*, Professional Development Internship Program, Camas High School (Camas, WA), Summer 2016.
- *Member*, Industrial/Postsecondary Advisory Committee, Career and Technical Education Program, Junction City High School (Junction City, OR), 2014-2015.
- *Judge*, Sunnyside School District Middle School Science Fair (Sunnyside, WA), February 2010.

E. AWARDS

E1. National and International Awards

International Conference Awards

- Best Undergraduate Poster (2018), "Aggregating Unit Manufacturing Process Models to Enable Environmental Impact Characterization of Polymer-Based Hybrid Manufacturing," Workshop on Reusable Abstractions of Manufacturing Processes, 2018 ASME Manufacturing Science and Engineering Conference (with B.S. student D. Harper and M.S. student S. Manoharan)
- Second Place, Doctoral Symposium - Engineering and Technology Track (2017), "Promoting Sustainable Product Design using Unit Manufacturing Process Analysis," Society of Design and Process Science Conference (with Ph.D. student K. Raoufi)
- Anatol Rapoport Memorial Award for Best Student Paper (2017), "Integration of Sustainability Indicators and the Viable System Model toward a Systemic Sustainability Assessment Methodology," 61st Annual Meeting of the International Society for the Systems Sciences, (with Ph.D. student A. Tong and OSU collaborator J. Calvo-Amodio)
- DFMLC Best Paper Award (2016), "Using Industry Focus Groups and Literature Review to Identify Challenges in Sustainable Assessment Theory and Practice," 21st ASME Design for Manufacturing and the Lifecycle Conference, (with M.S. student M.M. Smullin, NIST collaborators M. Mani and K.C. Morris)
- DFMLC Best Paper Award (2015), "Unit Manufacturing Process Models for Ferromagnetic and Non-Ferromagnetic Alloy Surface Inspection Methods," 20th ASME Design for Manufacturing and the Lifecycle Conference, (with M.S. student I.C. Garretson, NIST collaborators M. Mani, S. Leong, and Boeing collaborators M.D. Carter and A.E. Simmons)
- LEO Best Paper Award (2012), "Integrating Sustainability Assessment into Manufacturing Decision Making," 19th CIRP Conf. on Life Cycle Engineering (with M.S. student H. Zhang)

Awards from the Profession

- SME Distinguished Faculty Advisor Award (2016, 2023)
- TU-Chemnitz Visiting Professor Award (2021), Chemnitz, Germany, October 3-9, 2021
- Fulbright-Tampere University U.S. Scholar Award (2019), Tampere, Finland, 08/2019-03/2020
- Tampere University of Technology Visiting Professor (2018), Tampere, Finland, August-September, 2018
- Italian Machine Tool Technology Award Program, Invited Professor (2018)
- WEPAN President's Award to the NSF-funded TECAID (Transforming Engineering Culture to Advance Inclusion and Diversity) team: Michigan Technological University, University of Oklahoma, Oregon State University, Purdue University, and Texas Tech University (2016)
- NAE US Frontiers of Engineering Symposium, Invited Participant (2015)
- SME/IAC Partnership Participation Award (2013, 2014, 2015)
- SME Warren DeVries Outstanding Young Manufacturing Engineer Award (2014)
- NSF Travel Grant for the 4th International Forum on Sustainable Manufacturing (2014)
- SME Faculty Advisor Professional Development Award (2012)
- NSF CI-TEAM PI Meeting Travel Award (2011)
- NSF/AAAI Artificial Intelligence and Sustainable Design Symposium Travel Award (2011)
- NSF CE-21 Meeting Travel Award (2011)
- NSF CIRP (International Academy for Production Engineering) Fellowship (2009)

Professional and Honorary Societies
- American Society of Mechanical Engineers
- Society of Manufacturing Engineers
- Institute of Industrial & Systems Engineers
- Sigma Xi (inducted 2008)
- Phi Kappa Phi (inducted 2006)
- Pi Tau Sigma (inducted 2000)

E2. State and Regional Awards
- Hewlett Foundation ESWI-S Proposal Incentive Stipend (2011)

E3. University or Community Awards
- COE Graduate Mentoring Award (2022)
- Tom and Carmen West Faculty Scholar (2019-2022)
- OnPoint Faculty of the Game Award (2016)
- OSU Industry Partnering Award (2016)
- OSU International Programs Faculty Grant (2012)
- Swigert Faculty Fellow (2011-2012)
- NSF IGERT Traineeship (2004-2008)
- MTU Sustainable Futures Institute Graduate Scholar (2006-2008)
- Caterpillar Research Assistantship (2005-2006)
- MTU Graduate Student Council Travel Grant (2004, 2005, 2008)
- MTU Proposal Incentive Award (2002, 2003, 2005)
- DeVlieg Doctoral Scholarship (2005)
- Century II Henes Fellowship (2004)
- MTU Graduate Student Council Leader Award (2003)
- Ford Motor Co. Fellowship (2001-2003)
- Fundamentals of Engineering Exam (passed 2001)