



Department of
Mechanical Engineering
UNIVERSITY OF WISCONSIN-MADISON

1513 University Ave
Madison, WI 53706



MECHANICAL ENGINEERING Faculty Investitures

Thursday, September 29, 2022

4:00 pm

Mechanical Engineering Building

Program

4:00 pm - Welcome and introduction

Dean Ian Robertson

4:05 pm - Presentation of honorees

Chair Darryl Thelen

Honorees:

Peter Adamczyk, Mead Witter Foundation Associate Professor

Mark Anderson, Consolidated Papers Associate Professor

Krishnan Suresh, Mead Witter Foundation Professor

Lih-Sheng (Tom) Turng, Consolidated Papers Professor

Christian Franck, Bjorn Borgen Professor

Kate Fu, Jay and Cynthia Ihlenfeld Associate Professor

Sage Kokjohn, Jean and Phil Myers Associate Professor

Dan Negrut, Bernard A. & Frances M. Weideman Professor

Greg Nellis, William A. and Irene Ouweneel-Bascom Professor

Tim Osswald, Kuo and Cindy Wang Professor

Xiaoping Qian, Elmer R. and Janet A. Kaiser Professor

Dave Rothamer, Robert Lorenz Professor

Closing remarks

5:00 pm - Reception on Engineering lawn



Ian M. Robertson

Grainger Dean of the
College of Engineering



Darryl Thelen

John Bollinger Chair of Mechanical Engineering
& Bernard A. and Frances M. Weideman
Professor

Peter Adamczyk

Mead Witter Foundation Associate Professor



Professor Adamczyk studies human biomechanics related to locomotion (walking and running). His research group, the UW Biomechatronics, Assistive Devices, Gait Engineering and Rehabilitation Lab (UW BADGER Lab) performs studies of how movement is impaired, creates interventions through development of new technology, and applies these technologies in studies of how these and other interventions affect human movement.

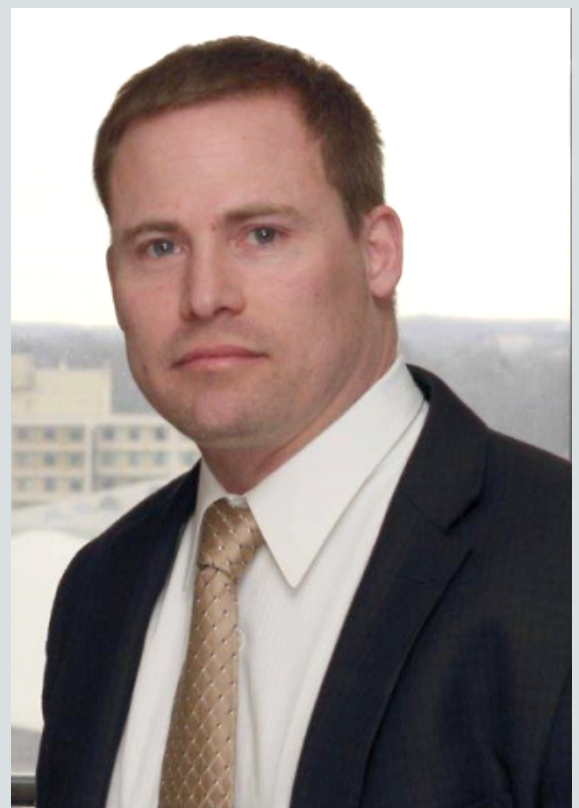
My main teaching responsibility is the Introduction to Robotics course (ME 439). This course focuses on hands-on construction and use of simple robots, including state-of-the-art control software. It culminates in a project made up by each student team to showcase what they have learned – the highlight of each semester for me as an instructor. I am part of the team working to revamp our Mechatronics curriculum to position our students for success in this growth area.

Mark Anderson

Consolidated Papers Associate Professor

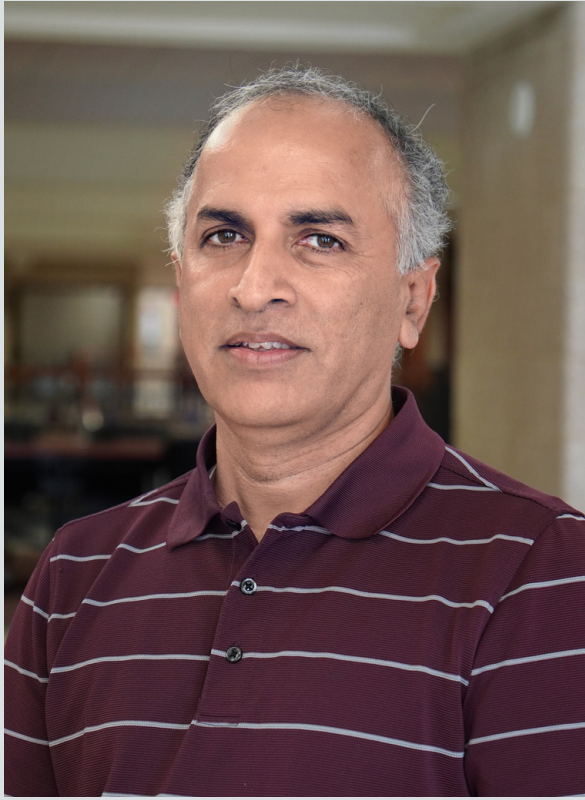
Professor Anderson's research covers a wide breadth of fundamental physics and applications relating to energy utilization, energy transfer, and energy production. His focus is on experimental thermal hydraulics, heat transfer, and fluid dynamics applied to energy utilization (nuclear, solar, fossil, wind power generation, and storage) and he leads the University of Wisconsin's Thermal-Hydraulic Laboratory.

On the educational front, I teach courses on power plant technology, multiphase fluids and thermodynamics, as well as supporting student's senior design projects. Professorship funds are used to support students to visit a couple of different power plants in the vicinity of Madison. This allows them to see first-hand how energy is generated and learn about the details of electrical energy production, transmission, and the associated issues behind the production.



Krishnan Suresh

Mead Witter Foundation Professor



Professor Suresh and his research group focus on four fundamental and interrelated research problems: (1) design optimization, (2) design for manufacturing, (3) computational mechanics, and (4) high performance computing. He is the director of the Engineering Representations and Simulation Laboratory (ERSL) and co-director of the Wisconsin Applied Computing Center.

With the support provided by the Mead Witter Foundation Professorship, I will continue to pursue excellence in both teaching and research. I plan to enhance the contents of my textbook “Design Optimization using MATLAB and SOLIDWORKS” and publish a second edition through Cambridge Publishers. I also plan to explore new areas of research in design optimization. Both these efforts would not have been possible without the flexibility afforded to me by the professorship.

Lih-Sheng (Tom) Turng

Consolidated Papers Professor

Professor Turng's research aims to bridge engineering with life science in manufacturing of therapeutic products such as orthopedic implants and artificial blood vessels.

In addition to my on-going research activities, I enjoy teaching an undergraduate course on Manufacturing Fundamentals every semester and a tech elective course every year. Seeing how the students pick up the lecture materials and apply them to real-world applications has been the greatest joy of being a professor. This Consolidated Papers Foundation Professorship allows me to explore new, interdisciplinary research that could lead to new and novel manufacturing methods that enable product and process innovations for customers, energy and material savings for producers, as well as long-term sustainability for the society and environment.



Christian Franck

Bjorn Borgen Professor



Professor Franck's lab specializes in cellular biomechanics and in the development of new experimental mechanics techniques at the micro and nanoscale. Current areas of interests are the development and application of three-dimensional microscopy techniques for understanding the 3D deformation behavior of neurons in the brain during traumatic brain injuries, the adhesion and migration behavior of human neutrophils and cancer cells in 3D environments, and the role of non-linear material deformations in soft matter.

The professorship funding allows me to support innovative undergraduate research for three students in my lab. Funding innovative undergraduate research is often difficult to achieve through federal sponsors considering the current competitive landscape and adverse climate for supporting high-risk, high-reward research based on just an idea. This is where the power of the professorship really comes into play.

Kate Fu

Jay and Cynthia Ihlenfeld Associate Professor

Professor Fu works to help expand understanding of designers and design by applying mixed-methods approaches, paradigms and expertise. She uses advanced computation—including data mining, modeling and artificial intelligence—to provide information to designers to improve their design output and innovation potential.

I have taken over instruction in our ME 231 course (Geometric Modeling for Design and Manufacturing) and I plan to develop a new technical elective on engineering design for senior level undergraduates and early career graduate students. The ME IAB has expressed a desire for us to have a more integrated design curriculum, and I am spearheading a proposal for this initiative. I am serving as a faculty mentor to both the undergraduate and graduate Women in Mechanical Engineering student groups, which has been highly rewarding as well.



Sage Kokjohn

Jean and Phil Myers Associate Professor



Professor Kokjohn is one of 5 active Principal Investigators in UW-Madison's Engine Research Center (ERC) and he uses detailed modeling and experiments to explain the mechanisms controlling high-efficiency energy conversion systems. Prof. Kokjohn's areas of interest include turbulent combustion model development and identification of pathways to achieve robust, high-efficiency energy conversion.

Prof. Myers was one of the founders of the ERC and a pioneer in engine research and analysis. His statement: "The engine is the ideal teaching tool – it features all of the elements of engineering: materials, fluids, thermodynamics, lubrication, chemistry, electronics, etc." is the foundation of my teaching and research efforts. The support provided by the Phil and Jean Myers Professorship enables me to continue in his tradition of educating future engineers to solve challenging problems that impact large portions of the population worldwide.

Dan Negrut

Bernard A. & Frances M. Weideman Professor

Professor Negrut leads the Simulation-Based Engineering Lab where they are researching how to increase the role that computer simulation plays in the engineering design process. The lab has multiple NASA, US Army, and National Science Foundation projects that investigate a variety of topics via computer simulation, from how to build human habitats on the moon, to how to test in simulation Army vehicle systems before building them in practice.

The support provided by the professorship enables me and my lab students to organize outreach programs that target (i) broadening the participation of under-represented students in the field of computational science, and (ii) facilitating technology transfer to industry. The Chair endowment also allowed me to run a simulation-in-robotics consortium meeting that facilitates technology transfer, and which attracted more than 200 registrants from more than 90 organizations.



Greg Nellis

William A. and Irene Ouweneel-Bascom Professor



Professor Nellis leads the Solar Energy Lab. SEL research involves a number of interrelated areas: solar heating and cooling, photovoltaics, desiccant and absorption cooling, control of HVAC systems, air quality in buildings, thermal storage and food processing.

The support provided by the Ouweneel-Bascom Chair has historically allowed its recipients to contribute to engineering education through the development of textbooks and related software. I have tried to continue this tradition developing the Introduction to Engineering Heat Transfer book by Nellis and Klein which was published in 2021 as well as the supporting resources that have enriched several classes related to heat transfer in the department. This work would not have been possible without the flexibility afforded to me by the professorship.

Tim Osswald

Kuo and Cindy Wang Professor

Professor Osswald's research in polymer engineering includes modeling and simulation in polymer processing, engineering design with plastics, sustainability and biopolymers. He is co-Director of the Polymer Engineering Center at the University of Wisconsin-Madison and is Honorary Professor of Plastics Technology at the University of Erlangen-Nuremberg in Germany and the National University of Colombia.

My teaching and educational responsibilities are in the field of polymer engineering. This includes courses, undergraduate research and undergraduate design projects that are polymer oriented. This is in line with the vision of Professor K.K. Wang (founder and donor of the K.K. and Cindy Wang Professorship), one of the pioneers of polymer engineering education.



Xiaoping Qian

Elmer R. and Janet A. Kaiser Professor



Professor Qian's research interests are in the area of computational design. He is interested in developing design methods and computer tools to advance multi-physics applications. His technical contributions span several sub-fields, including geometric modeling, topology optimization, shape optimization and isogeometric analysis.

The support provided by the Elmer R. and Janet A. Kaiser chair has been invaluable to my research and teaching. It has enabled me to explore research topics that are new to my group such as how deep learning can be beneficially used in computational design. It has also allowed me to expand geometric design courses by adding emerging topics such as design for additive manufacturing. My research and teaching would not have been possible with the support afforded to me by the professorship.

Dave Rothamer

Robert Lorenz Professor

Professor Rothamer leads the UW Engine Research Center and his work focuses on laser diagnostics development, in-cylinder processes, fuel impacts on engine operation and combustion, and particulate matter and engine aftertreatment.

Professor Lorenz was an ardent educator and researcher who exhibited excellence in both realms. Following this ideal, I have developed and continue to improve courses for advanced undergraduates and graduate students that provide the fundamental background needed for research and advanced studies in the areas of thermodynamics, non-equilibrium and chemically reacting flows, applied spectroscopy, and development and application of laser-based diagnostics and measurement systems. The support provided by the professorship is essential in allowing for the pursuit of excellence in both research and engineering education.



Special thanks and acknowledgement of all our donors that make these professorships possible:

Mead Witter Foundation
Bjorn Borgen
Jay and Cynthia Ihlenfeld
Jean and Phil Myers
Bernard A. & Frances M. Weideman

William A. and Irene Ouweneel-
Bascom
Kuo and Cindy Wang
Elmer R. and Janet A. Kaiser
Robert and Sally Lorenz

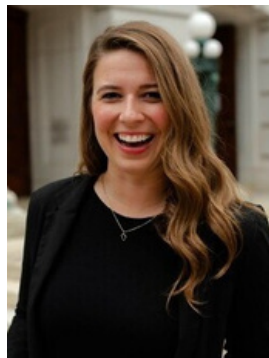


Advancement & Development Team



Brad Green

Senior Director of Development



Caroline Sullivan

Director of Development



Cathleen Walters

Associate Dean for Advancement



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