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MATERIALS SCIENCE & ENGINEERING DISTINGUISHED SEMINAR SERIES

Dr. Wojciech Z. Misiolek
Professor and Director
Lowey Institute
Lehigh University
Bethlehem, PA

Friday
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11:00AM — 12:00PM

Zoom Meeting Room

https://ucf.zoom.us/j/92827438672?pwd=azIxYnBJcEh0Y0toRk5lUTN5T2hqQT09

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3-D Metal Printing (SLM) - Challenges and Opportunities

Additive Manufacturing technologies are considered as potential competitive metal forming processes to existing wrought, casting, powder metallurgy and machining technologies. The additive processes are based on various approaches, however the selective laser melting (SLM) process is one of the leading candidates from the group of powder-based processes. The presented highlights of the SLM research conducted in our research group include results such as porosity, mechanical properties, influence of the surface quality on mechanical performance and characteristic microstructures. Additionally, the influence of the heat treatment on the final mechanical properties is presented for selected alloys. However, there are many engineering challenges, which need to be addressed such as surface quality, remaining porosity and residual stresses within the printed parts. Selected results of the SLM process applied to copper-tin and copper-nickel-silicon alloys as well as aluminum-silicon-magnesium and tungsten heavy alloys are presented.

Biography: **Dr. Wojciech (Wojtek) Z. Misiolek** is the Loewy Professor of Materials Forming and Processing and Director of the Loewy Institute (formerly the Institute for Metal Forming) at Lehigh University in Bethlehem, PA. Since 2016 he also serves as the Chair of the Materials Science and Engineering department at Lehigh. He is a graduate of the AGH – University of Science and Technology in Krakow, Poland. He obtained his MS and D.Sc. degrees in metallurgy in 1980 and 1985 respectively. In 1987 he came to Lehigh University supported by The Kosciuszko Foundation in New York, NY to study deformation of bi-materials. In 1988 he moved to Troy, NY where he conducted his research and teaching at Rensselaer Polytechnic Institute. In 1997 he moved back to Lehigh as a faculty member in Materials Science and Engineering as well as Mechanical Engineering and Mechanics departments. His research interests are in process engineering and microstructure characterization of materials with a special focus on deformation processing, powder metallurgy including additive manufacturing and physical metallurgy. Together with his graduate students and research associates he is using physical and numerical modeling methods to better understand and optimize processing of materials. He is an author or co-author of over 300 technical papers. Dr. Misiolek is a Fellow of ASM International, class 2005.