# SAE International Honors Ford Research Scientist, Mississippi State PhD Student With Henry O. Fuchs Student Award

*SAE International announces that Katherine Avery, Research Scientist with Ford Motor Company's Research and Innovation Center; and Mohammad J. Mahtabi, a third-year PhD student majoring in Mechanical Engineering at Mississippi State University, have been honored with the Henry O. Fuchs Student Award.*

Warrendale, Pa. (PRWEB) December 20, 2016 -- SAE Internationalannounces that Katherine Avery, Research Scientist with Ford Motor Company's Research and Innovation Center; and Mohammad J. Mahtabi, a third-year PhD student majoring in Mechanical Engineering at Mississippi State University, have been honored with the Henry O. Fuchs Student Award.

Established in 1991, this award recognizes a graduate or recently graduated student (i.e. post doctorate or new professor) that is working in the field of fatigue research and applications. The purpose of this award is to promote the education of engineering students in the area of fatigue technology.

This award honors the memory of Professor Henry O. Fuchs. Professor Fuchs participated in the SAE Fatigue Design & Evaluation Committee's research projects, was a member of the faculty who founded the SAE Fatigue Concepts in Design short course, published extensively in SAE and elsewhere in the technical community, and actively participated in the Surface Enhancement Division of the Committee which is responsible for many standards relating to surface treatments of metals for withstanding fatigue damage.

As a graduate student, Avery was a visiting scholar at Ford, and had internships at Oak Ridge National Laboratory and Tenneco, Inc. She also served as a teaching assistant at the University of Michigan in 2011, and a guest lecturer at Kettering University in 2013. Avery has authored or co-authored several papers on durability and high temperature fatigue of metals through SAE International and ASME. Together with her research collaborators, Avery was a recipient of the 2012 SAE Arch T. Colwell Merit Award. At the University of Michigan, she and her faculty adviser, Dr. Jwo Pan, were honored with the 2015 Robert M. Caddell Award for Research for their joint contributions in the areas of materials and manufacturing. For her active role in student leadership, Avery was presented with the Distinguished Leadership Award and the MLK Spirit Award from the Deans of U of M's College of Engineering in 2014.

Avery serves on the Michigan Engineering Alumni Board and is a member of SAE International, ASME and SWE. She holds a bachelor's degree in Mechanical Engineering from Kettering University, and a master's degree and PhD in Mechanical Engineering from the University of Michigan.

Mahtabi holds a bachelor's degree from the University of Tehran and a master's degree from Iran University of Science and Technology; he ranked as an honor student at both institutions. He is a third-year PhD student, majoring in Mechanical Engineering at Mississippi State University and is conducting his research at MSU's Center for Advanced Vehicular Systems (CAVS) under supervision of Dr. Shamsaei.

Mahtabi's dissertation is on different aspects of fatigue behavior of NiTi, an equiatomic alloy of nickel and titanium. This material is categorized as a shape memory alloy (SMA), while also exhibiting superelastic behavior. NiTi has become a preferred choice for many applications in the automotive, aerospace and biomedical industries. In automotive industry, the material has been used in engine control systems,

transmission control, and has the potential to be utilized in structural components, bumpers and crash structures.

He is using several experimental, analytical, and computational techniques to model the fatigue behavior of SMAs and explain the relationship between various aspects of the material, such as microstructural features, phase transformation, and loading, including mean strain/stress and variable amplitude effects, on the fatigue resistance. His research involves many complex (and coupled) physical phenomena with the need to understand and model: cyclic deformation, phase transformation, superelasticity, and damage accumulation. Based on his dissertation research on experimental and computational fatigue and fracture analysis, he has published several journal articles, one book chapter, and presented in multiple conferences.

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**Contact Information**
**Shawn Andreassi**
SAE International
http://www.sae.org
+1 (724) 772-8522

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