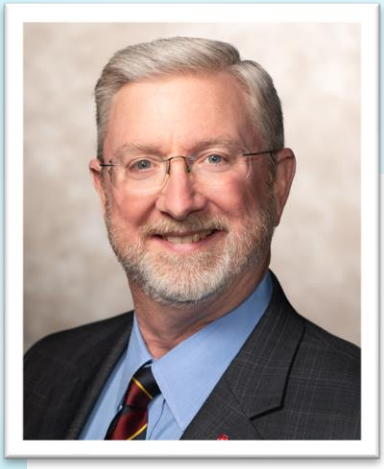


Alan Mantooth

Prof. Alan Mantooth received the B.S. and M. S. degrees in electrical engineering from the University of Arkansas in 1985 and 1986, respectively, and the Ph.D. degree from the Georgia Institute of Technology in 1990. He joined Analogy (now owned by Synopsys) in 1990. In 1998, he joined the faculty of the Department of Electrical Engineering at the University of Arkansas. He was promoted to his present rank of Distinguished Professor in 2011.

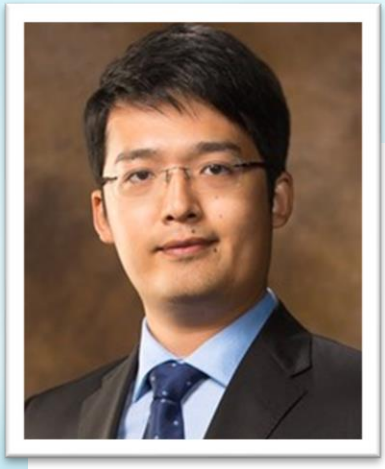
Prof. Mantooth has published over 350 refereed articles and has co-authored three books. He became an IEEE Fellow in 2009 and served as the President of IEEE Power Electronics Society for 2017-2018. Currently, he is the Editor-in-Chief of IEEE Open Journal of Power Electronics.

Prof. Mantooth helped establish the National Center for Reliable Electric Power Transmission (NCREPT) at the UA in 2005, for which he serves as the Executive Director. He also serves as the Executive Director for GRAPES (the NSF I/UCRC for GRid-connected Advanced Power Electronic Systems), and SEEDS (DoE Center for Secure, Evolvable Energy Delivery Systems). He also serves as the Deputy Director of the NSF Engineering Research Center for Power Optimization of Electro-Thermal Systems (POETS). He has co-founded two companies, Lynguent and Ozark Integrated Circuits.

The GRAPES Global Institute and The Pursuit of Carbon Neutrality

Abstract

Many nations have laid down challenges to transition their energy supplies and usage to net-zero or carbon-free by various dates. While many of these political goals are subject to revision or even abandonment, it is imperative that scientists and engineers provide the calculus that demonstrates what can be done, how it can be done, and why it must be done in order to achieve these objectives. This talk will demonstrate answers to the first two questions (what and how) because many have already established the why. Solutions, both aspirational and current, will be described. Among these are the mega wave of electrification of everything, hydrogen's role in the energy transition, and a grand vision that ties these and other components together for an attractive outcome from the aspects of sustainability, equity, and standard of living. The GRAPES Global Institute will be reviewed and its role in achieving a carbon neutral world by 2050 will be described. This talk will cover facts and figures about where we stand today and solutions that must be pursued if we can meet these objectives. Further, it will include discussion about how GRAPES can be an influencer and contributor to solutions within the United States and abroad.



Yue Zhao

Prof. Yue Zhao received a Ph.D. degree in electrical engineering from the University of Nebraska-Lincoln, Lincoln, USA, in 2014. He was an Assistant Professor in the Department of Electrical and Computer Engineering at the Virginia Commonwealth University, Richmond, USA, in 2014-2015. Since August 2015, he has been with the University of Arkansas, Fayetteville, where he is currently an Associate Professor in the Department of Electrical Engineering.

He is also affiliated with NSF I/UCRC on GRid-connected Advanced Power Electronics Systems (GRAPES) and National Center for Reliable Electric Power Transmission (NCREPT) at the University of Arkansas.
Prof. Zhao's research interests include electric machines and drives, power electronics, and renewable energy systems. His research projects are sponsored by the National Science Foundation (NSF), Department of Energy (DOE), and the Industry. He holds 4 U.S. patents and co-authored more than 100 papers in refereed journals and international conference proceedings. Prof. Zhao was a recipient of 2018 National Science Foundation CAREER Award, the 2020 IEEE Industry Applications Society (IAS) Andrew W. Smith Outstanding Young Member Achievement Award. Prof. Zhao is an Associated Editor of the IEEE Transactions on Industry Applications and IEEE Open Journal of Power Electronics.

Next-Generation SiC-based GRid-connected Advanced Power Electronic Systems (GRAPES)

Abstract

Distributed generation is becoming more prevalent in electric power distribution systems as costs are reaching grid parity, in particular for solar generation. At the same time, the need for energy storage is becoming more important since peak generations very often do not coincide with peak demands. Therefore, developing grid interfaces based on power electronics that combine renewable energy generation and energy storage is of interest. In this presentation, several case studies will be presented on the design and validation of all silicon carbide (SiC) based converters for combined integration of renewables, energy storage and charging systems.