About the Editor

David L. Wood III, is a Senior Staff Scientist, Roll-to-Roll Manufacturing Team Lead, Fuel Cell Technologies Program Manager, and UT Bredesen Center Faculty Member at Oak Ridge National Laboratory (ORNL) researching novel electrode architectures, advanced processing methods, manufacturing science, and materials characterization for lithium ion batteries and low-temperature fuel cells, and has been employed there since 2009. He is a well-known energy conversion and storage researcher with an industrial and academic career that began in 1995. From 1997 to 2002, he was employed by General Motors Corporation and SGL Carbon Group, excelling at applied research and development related to automotive and stationary proton-exchange fuel cells (PEFC) technology. His work at Los Alamos National Laboratory (LANL) and Cabot Corporation from 2003 to 2009, focused on elucidation of key chemical degradation mechanisms, development of accelerated testing methods, and component development.

Dr. Wood received his Chemical Engineering, Bachelor of Science from North Carolina State University in 1994. He received his Chemical Engineering, Master of Science from the University of Kansas in 1998, and earned an Electrochemical Engineering, Ph.D. from the University of New Mexico in 2007. He was part of two LANL research teams that won the United States Department of Energy (USDOE) Hydrogen Program Research and Development Award for outstanding achievement in 2005 and 2009. He was also part of the Cabot Corporation Direct Methanol Fuel Cell team which won the Samuel W. Bodman Award for Excellence in 2008. Dr. Wood was also the 2011 winner of the ORNL Early Career Award for Engineering Accomplishment and led a team that won both a 2013 Research and Development 100 award and 2014 Federal Laboratory Consortium (FLC) award with Porous Power Technologies. He has 12 issued patents and patent applications, authored 39 refereed journal articles and transactions papers, authored 2 book chapters, and has given 59 technical presentations. His work is often cited in related technical research publications. Dr. Wood manages programs and financial operations related to hydrogen infrastructure issues, polymer electrolyte fuel cells, and lithium ion batteries.
Impacting Rapid Hydrogen Fuel Cell Electric Vehicle Commercialization

System Cost Reduction and Subcomponent Performance Enhancement

David L. Wood III

Fuel cell electric vehicles (FCEVs) powered by proton-exchange membrane fuel cells (PEFC) and fueled by hydrogen offer the promise of zero emissions with excellent driving range of 300-400 miles and fast refueling times of less than five minutes; two major advantages over battery electric vehicles (BEVs). FCEVs face several remaining major challenges in order to achieve widespread and rapid commercialization. Many of the challenges, especially those from an FCEV system and subsystem cost and performance perspective are addressed in this book.

Chapter topics include:

- impact of FCEV commercialization
- new hydrogen infrastructure cost comparisons
- stack bipolar plate corrosion protective coatings
- onboard chemical hydride storage
- new hydrogen sensors
- simulation of onboard hydrogen storage strategies
- vehicle air supply systems
- FCEV energy management
- optimization of hybrid FCEV powertrains

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