Advanced Materials for Electrochemical Energy Conversion and Storage Systems

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Abstract

Energy conversion and storage are considered two of the most important technologies in today's green and sustainable energy science [1-4]. Our research work has spanned a wide range of subjects, from nano electrocatalysts for electrochemical conversion reactions and advanced materials for electrochemical energy storage systems. Our group has established both experimental and computational strategies for the development of advanced energy materials and for understanding interfacial phenomena. Our recent development in advanced energy materials for electrochemical conversion reactions including hydrogen evolution reaction (HER), hydrogen oxidation reaction (HOR), oxygen reduction reaction (ORR) and oxygen evolution reaction (OER) will be presented. Meanwhile, our recent development in advanced energy materials for novel battery systems will be reported. Our work has led to a better understanding of electrochemical reaction mechanisms and to an improved ability to predict the properties of potential new materials.

References:

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Education:
1984–1987 Ph.D. in Chemical Engineering, National Cheng Kung University
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Current Positions:
1. Chair Professor, Taiwan Tech (2006.8–present)
2. Director, Sustainable Energy Development Center, Taiwan Tech (2012.2–present)
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4. Associate Editor, ACS Sustainable Chemistry & Engineering (2015–present)

Experience:
1. President, The Electrochemical Society of Taiwan (ECSTw) (2013.8–2017.12)
2. President, Taiwan Chapter of the Electrochemical Society of USA (2013.1–2017.12)
4. Coordinator, Program of Chemical Engineering, Department of Applied Science and Engineering, National Science Council, Taiwan (2008.12–2011.12)
5. Chairman, Department of Chemical Engineering, National Taiwan University of Science and Technology (2007.8–2010.7)
6. President, Chinese Association for Chemical Sensors and Technology in Taiwan (2002.9–2004.8)
7. President, Taiwan Chapter of the Electrochemical Society of USA (2009.6–2012.12)

Honors & Awards:
4. Outstanding Research Fellow of National Science Council, Taiwan, R. O. C., (2011)
5. Academician of the Academy of Sciences of Lisbon (2011)
6. TECO award in Chemical Engineering & Materials Science, TECO Technology Foundation (2011)
8. Chair Professor of Green Technology, Far Eastern Y.Z. Hsu Science and Technology Memorial Foundation (2010)
9. Outstanding research award from Association of Chemical Sensors in Taiwan (ACST) (2005)
10. Outstanding research award from National Science Council of Taiwan (three times)