

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

1981~1984 M. S. in Chemical Engineering, National Cheng Kung University

1977~1981 B. S. in Chemical Engineering, National Cheng Kung University

Current Positions:

1. **Chair Professor**, Taiwan Tech (2006.8~present)
2. **Director**, Sustainable Energy Development Center, Taiwan Tech (2012.2~present)
3. **Adjunct Researcher**, National Synchrotron Radiation Research Center (2005.8~present)
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)
3. **Taiwan Representative**, The International Society of Electrochemistry (ISE) (2014.1~2017.12)
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)
8. **President**, The Society of Hydrogen and Fuel Cells of Taiwan (2010.1~2013.12)

Honors & Awards:

1. **National Chair Professorship** in Engineering and Applied Science, Ministry of Education (2018)
2. **Academician** of Asian Pacific Academy of Materials (APAM) (2017)
3. **Fellow** of International Society of Electrochemistry (ISE) (2014)
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)
7. **Academic Award** in Engineering and Applied Science, Ministry of Education (2010)
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)