

## **Eric D. Wachsman**

### **Education:**

Ph.D. Materials Science & Engineering, Stanford University, Stanford, California, 1990

M.S. Chemical Engineering, Stanford University, Stanford, California, 1986

B.S. Chemical Engineering, University of California, Berkeley, California, 1982

### **Academic Experience:**

- University of Maryland, College Park, Professor, Director of UMD Energy Research Center, 2009 – present
- Departments of Materials Science and Engineering, and Chemical Engineering, University of Maryland, College Park, William L. Creutz Centennial Chair in Energy Research, 2009 - present
- Florida Institute for Sustainable Energy, University of Florida, Director, 2006-2009
- UF-DOE High Temperature Electrochemistry Center, University of Florida, Director, 2005-2009.
- Department of Materials Science and Engineering, University of Florida, Rhines Chair Professor, 1997-2009
- Department of Materials Science and Engineering, Stanford University, Lecturer, 1993.

### **Non-Academic Experience:**

- Materials Research Center, SRI International, Senior Scientist, 1989-1997.
- Xerox Palo Alto Research Center, Member Research Staff, 1984-86.
- Non Volatile Memory Division, Intel, Process Engineer 1982-84.

### **Certifications or professional registrations**

- 24 Registered patents

### **Current membership in professional organizations**

- Electrochemical Society

### **Honors & Awards**

- Carl Wagner Memorial Award, 2017
- Professional Member of the World Academy of Ceramics, 2017
- Fellow of The Electrochemical Society, 2008
- Fellow of The American Ceramic Society, 2012
- Sir William Grove Award, International Association for Hydrogen Energy, 2014
- Pfeil Award, The Institute of Materials, Minerals, and Mining, 2014
- Outstanding Invention of 2013, University of Maryland, Office of Technology Licensing
- Fuel Cell Seminar & Exposition Award, 2012
- HTM Outstanding Achievement Award, The Electrochemical Society, 2012
- Rhines Chair Professor of Materials Science & Engineering, 2008-2009
- University of Florida Research Foundation Professor, 2005-2008
- Materials Science & Engineering Faculty Excellence Award, 2007-2008

- Materials Research Society, Top 5 Hot Talks/Cool Papers, Spring 2007 Meeting
- University of Florida Faculty Achievement, 2007
- NASA Johnson Space Center Group Achievement Award, 2007
- **Service Activities**
  - "Climate Action 2016 Summit," International invitation only summit as follow up to Paris COP21 under auspices of Secretary General of the United Nations, Washington, DC, May 5-6, 2016 - Energy Track Leadership
  - "Energy and Climate Change," 15<sup>th</sup> National Conference and Global Forum on Science, Policy and the Environment, National Council for Science and the Environment, Washington, DC, January 27-29, 2015 - Conference Leadership Group
  - Board of Directors, Maryland Clean Energy Center, 2011-2016 – Governor Appointment
  - Board of Directors, The Electrochemical Society, 2006-2007 and 2013-2016
  - Chair, Interdisciplinary Science & Technology Subcommittee, The Electrochemical Society, 2013-2016
  - Chair, New Technology Subcommittee, The Electrochemical Society, 2011-2013
  - Chair, National Capitol Section, The Electrochemical Society, 2011-2016
  - Faculty Advisor, University of Maryland Student Chapter, The Electrochemical Society, 2011-present
  - Editor-In-Chief, *Ionics*
  - Editor, *Energy Systems*
  - Chair, Olin Palladium Award Committee, The Electrochemical Society, 2009-present
  - Fuel Cell Organizing Committee, The Electrochemical Society, 2006-2016
- **Principal Publications of the last five years:**
  - “Lithium-ion conductive ceramic textile: A new architecture for flexible solid-state lithium metal batteries”, Yunhui Gong, Kun Fu, Shaomao Xu, Jiaqi Dai, Tanner R. Hamann, Lei Zhang, Gregory T. Hitz, Zhezhen Fu, Zhaohui Ma, Dennis W. McOwen, Xiaogang Han, Liangbing Hu, and E.D. Wachsman, *Materials Today*, DOI: <https://doi.org/10.1016/j.mattod.2018.01.001> (2018)
  - “Chromium Poisoning Effects on Surface Exchange Kinetics of La<sub>0.6</sub>Sr<sub>0.4</sub>Co<sub>0.2</sub>Fe<sub>0.8</sub>O<sub>3-?</sub>,” Y-L. Huang, C. Pellegrinelli, and E. D. Wachsman, *ACS Applied Materials & Interfaces*, DOI: [10.1021/acsami.7b02762](https://doi.org/10.1021/acsami.7b02762)(2017)
  - “Direct Observation of Enhanced Water and Carbon Dioxide Reactivity on Multivalent Metal Oxides and Their Composites,” Y-L. Huang, C. Pellegrinelli, A. Geller, S-C. Liou, A. Jarry, L. Wang, Y. Yu, H. Bluhm, E. Crumlin, B. W. Eichhorn, E. D. Wachsman, *Energy & Environmental Science*, 10, 919-923 (2017) DOI: [10.1039/c7ee00363c](https://doi.org/10.1039/c7ee00363c)
  - “Reducing Interfacial Resistance between Garnet-Structured Solid-State Electrolyte and Li Metal Anode by a Germanium Layer,” W. Lui, Y. Gong, Y. Zhu, Y. Li, Y. Yao, Y. Zhang, K. Fu, G. Pastel, C-F. Lin, Y. Mo, E.D. Wachsman, and L. Hu, *Advanced Materials*, 29, (2017) DOI: [10.1002/adma.201606042](https://doi.org/10.1002/adma.201606042)
  - “Garnet Solid Electrolyte Protected Li Metal Batteries,” B. Liu, Y. Gong, Y. Zhu, K. Fu, X. Han, Y. Yao, G. Pastel, C. Yang, H. Xie, E.D. Wachsman, and L. Hu, *ACS Applied Materials & Interfaces*, 9, 18809-18815 (2017) DOI: [10.1021/acsami.7b03887](https://doi.org/10.1021/acsami.7b03887)

- “Durability of (La<sub>0.8</sub>Sr<sub>0.2</sub>)<sub>0.95</sub>MnO<sub>3-?</sub>-(Er<sub>0.2</sub>Bi<sub>0.8</sub>)<sub>2</sub>O<sub>3</sub> Composite Cathodes for Low Temperature SOFCs,” A. S Painter, Y.-L. Huang, and E.D. Wachsman, *Journal of Power Sources*, 360, 391-398 (2017).
- “Three-Dimensional Bilayer Garnet Solid Electrolyte Based High Energy Density Lithium Metal-Sulfur Batteries,” K. Fu, Y. Gong, Y. Li, S. Xu, Y. Wen, L. Zhang, C. Wang, G. Pastel, J. Dai, B. Liu, H. Xie, Y. Yao, G. Hitz, D. McOwen, E.D. Wachsman, and L. Hu, *Energy & Environmental Science*, (2017) DOI: [10.1039/c7ee01004d](https://doi.org/10.1039/c7ee01004d)
- "Functionally Graded Bismuth Oxide/Zirconia Bilayer Electrolytes for High Performance Intermediate-Temperature Solid Oxide Fuel Cells (IT-SOFCs)", D.W. Joh, J.H. Park, D. Kim, E.D. Wachsman, K.T. Lee. . *Acs Applied Materials & Interfaces*. (2017), PMID [28248479](https://pubmed.ncbi.nlm.nih.gov/28248479/) DOI: [10.1021/acsami.6b16660](https://doi.org/10.1021/acsami.6b16660)
- “Negating Interfacial Impedance in Garnet-Based Solid-State Li-Metal Batteries,” X. Han, Y. Gong, X. He, G.T. Hitz, J. Dai, K. Xu, Y. Mo, V. Thangadurai, E.D. Wachsman, and L. Hu, *Nature Materials*, doi:10.1038/nmat4821, (2016)
- “Electrochemical and Catalytic Properties of Fe-Doped SrCo<sub>0.9-x</sub>Nb<sub>0.1</sub>Fe<sub>x</sub>O<sub>3-δ</sub> Cathode Materials,” G. Cohn, J. Wang, C. Pellegrinelli, K. Huang, and E.D. Wachsman, *Journal of the Electrochemical Society* (2016)163(9): F979-F987; doi:10.1149/2.0211609jes.
- “Flexible, Solid-State Lithium Ion-conducting Membrane with 3D Garnet Nanofiber Networks,” K. Fu, Y. Gong, J. Dai, A. Gong, X. Han, Y. Yao, Y. Wang, C. Wang, Y. Chen, C. Yan, E.D. Wachsman, and L. Hu, *Proceedings of the National Academy of Sciences*, (2016) DOI/10.1073/pnas.1600422113
- "Transition from Super-lithiophobicity to Super-lithiophilicity of Garnet Solid-State Electrolyte", W. Luo, Y. Gong, Y. Zhu, K.K. Fu, J. Dai, S.D. Lacey, C. Wang, B. Liu, X. Han, Y. Mo, E.D. Wachsman, L. Hu. . *Journal of the American Chemical Society*. (2016) PMID 27570205 DOI: 10.1021/jacs.6b06777
- “Dysprosium and Gadolinium Double Doped Bismuth Oxide Electrolytes for Low Temperature Solid Oxide Fuel Cells,” D.W. Jung, K.T. Lee, and E.D. Wachsman, *Journal of The Electrochemical Society*, **163**, F411-4145 (2016).
- “Fundamental Impact of Humidity on SOFC Cathode ORR,” Y-L, Huang, C. Pelligrinelli, and E.D. Wachsman, *Journal of the Electrochemical Society*, **163** (3) F171-F182 (2016).
- 67 additional peer reviewed articles 2011-present