

## **BIOGRAPHICAL SKETCH**

### **Jay A. Switzer**

Chancellor's Professor

University of Missouri Curators' Distinguished Professor Emeritus

Senior Investigator, Graduate Center for Materials Research

Missouri University of Science and Technology (MS&T)

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### **Professional Preparation**

B.S. Chemistry, University of Cincinnati, Cincinnati, Ohio, June 1973.

M.A. Inorganic Chemistry, Wayne State University, Detroit, Michigan, December 1975.

Ph.D. Inorganic Chemistry, Wayne State University, Detroit, Michigan, March 1979.  
(Professor John F. Endicott, advisor).

### **Appointments**

9/2020-Present Chancellor's Professor

9/2020-Present University of Missouri Curators' Distinguished Professor Emeritus

6/1990-Present Senior Investigator, Graduate Center for Materials Research-Missouri  
University of Science and Technology

9/1999-9/2020 Donald L. Castleman Professor of Discovery in Chemistry, MS&T

1/1996-9/2020 Curators' Distinguished Professor of Chemistry and Senior Investigator,  
MS&T

6/1990-12/1995 Professor of Chemistry and Senior Investigator, Graduate Center for  
Materials Research-Missouri University of Science and Technology

1/1987-6/1990 Associate Professor, Materials Science and Engineering, University of  
Pittsburgh

4/1979-12/1986 Senior Research Chemist, Alternative Energy and Minerals Resources  
Group, Union Oil Company of California (UNOCAL)

### **Awards and Honors**

1. ECS Electrodeposition Research Award, 204<sup>th</sup> Electrochemical Society National Meeting, Orlando, FL, October, 2003.

2. American Chemical Society Midwest Award, ACS Midwest Meeting, Quincy Illinois, October, 2006.

3. President's Award for Research and Creativity (May, 2007).

4. Elected as Fellow to AAAS (2013), MRS (2015), and ECS (2018).

5. Japan Society for the Promotion of Science (JSPS) Fellowship (2017).

### **Ten Significant Publications**

- (1) M. V. Kelso, N. K. Mahenderkar, Q. Chen, J. Z. Tubbesing, and J. A. Switzer, "Spin coating epitaxial films," *Science* **364**, 166-169 (2019).
- (2) N. K. Mahenderkar, Q. Chen, Y.-C. Liu, A. R. Duchild, S. Hofheins, E. Chason, and J. A. Switzer, "Epitaxial lift-off of electrodeposited single-crystal gold foils for flexible electronics," *Science* **355**, 1203-1206 (2017).
- (3) J. C. Hill, A. T. Landers, and J. A. Switzer, "An electrodeposited inhomogeneous metal-insulator-semiconductor junction for efficient photoelectrochemical water oxidation," *Nature Mater.* **14**, 1150-1155 (2015).
- (4) N. K. Mahenderkar, Y.-C. Liu, J. A. Koza, and J. A. Switzer, "Electrodeposited germanium nanowires," *ACS Nano* **8**, 9524-9530 (2014).
- (5) J. A. Switzer, H. M. Kothari, P. Poizot, S. Nakanishi, and E. W. Bohannon, "Enantiospecific electrodeposition of a chiral catalyst," *Nature* **425**, 490-493 (2003).
- (6) R. Liu, A. A. Vertegel, E. W. Bohannon, and J. A. Switzer, "Epitaxial electrodeposition of ZnO nanopillars on single-crystal gold," *Chem. Mater.* **13**, 508-512 (2001).
- (7) J. A. Switzer, M. G. Shumsky, and E. W. Bohannon, "Electrodeposited ceramic single crystals," *Science* **284**, 293-296 (1999).
- (8) E. W. Bohannon, M. G. Shumsky, and J. A. Switzer, "Epitaxial electrodeposition of copper(I) oxide on single-crystal gold(100)," *Chem. Mater.* **11**, 2289-2291 (1999).
- (9) J. A. Switzer, C. J. Hung, B. E. Breyfogle, M. G. Shumsky, R. Van Leeuwen, and T. D. Golden, "Electrodeposited defect-chemistry superlattices," *Science* **264**, 1573 (1994).
- (10) J. A. Switzer, M. J. Shane, and R. J. Phillips, "Electrodeposited ceramic superlattices," *Science*, **247**, 444 (1990).

## **Students and Postdoctoral Associates Recently Supervised**

### **Undergraduate Students (15 total)**

**(Present)** Christine Clauson and Isaiah Robertson.

### **Graduate Students (29 total)**

**(Present)** John Tubbesing, Bin Luo, and Xiaoting Zhang.

**(Previous)** Dr. Caleb Hull (VP, Catalytic Innovations), Dr. Meagan Kelso (Applied Materials), Dr. Qingzhi Chen (VerAvanti), Dr. Naveen Mahenderkar (Lam Research), Dr. Allen Liu (Lam Research). Dr. Sanaz Parast (postdoc, MS&T), Dr. Rakesh Gudavarthy (Intel), Dr. Elizabeth A. Kulp (Mallinckrodt), Dr. Zhen He (Assistant Professor of Chemistry, Central South University, Changsha, Hunan, China), Dr. Sansanee Boonsalee (Depart. Of Science Service, Bangkok, Thailand), Dr. Guojun Mu (Global Foundaries), Dr. Hiten Kothari (Intel); Dr. Richard Phillips (SunEdison); Dr. Mike Shane (Kyocera Ceramics); Dr. Bryan Breyfogle (Professor and Chairman of Chemistry, Southwest Missouri State University); Dr. Ling-Yuang Huang (Professor, Chem. Engr., National Taipei University of Technology, Taiwan); Dr. Chen-Jen Hung (CEO, Taiwan Solar); Dr. Eric Bohannon (X-ray Specialist at MS&T). Dr. Run Liu (Associate Professor of Chemistry, Zhejiang University, China).

### **Postdoctoral Associates (15 total)**

**(Present)** Dr. Avishek Banik

**(Previous)** Dr. Jakub Koza (Brewer Science), Dr. James Hill (Bioanalytical Systems), Dr. Teresa Golden (Professor of Chemistry at the University of North Texas), Dr. Steven Limmer (EverReady); Dr. Shaibal Sarkar (Assistant Professor, India Institute of Technology- Bombay); Dr. Vishnu Rajasekharan (Hach); Dr. Ryne Raffaele (Vice President for Research and Assoc. Provost, Rochester Inst. of Technology), Dr. Alexey Vertegel (Assoc. Professor of Bioengineering at Clemson University), Dr. Shuji Nakanishi (Professor of Chemistry at Osaka University), Dr. Philippe Poizot (Professor, Univ. de Nantes, France), Dr. Thomas A. Sorenson (First Solar).

## **Research Support**

### ***Current Research Support***

1. “Epitaxial Electrodeposition of Metal Oxide Thin Films and Superlattices for Energy Conversion and Storage” Department of Energy, Office of Basic Energy Science, Division of Materials Sciences & Engineering, Synthesis & Processing Program, Proposal #DE-FG02-08ER46518, \$2,370,000, thirteen years, September 1, 2008 – May 31, 2021. Sole PI on grant (100% shared credit).

### ***Recent Research Support***

1. “MRI: Acquisition of and Electron-beam Lithography System for Nanofabrication and Nanoscience Research and Education,” National Science Foundation, Proposal #DMR-1531980, \$840,000, two years, September 1, 2015 – August 31, 2017. Jay Switzer, PI (40% shared credit). Co-PIs = Yew San Hor, Edward Kinzel, Manashi Nath, and Heng Pan.

2. “Resistance Switching in Electrodeposited Metal Oxide Thin Films and Superlattices,” National Science Foundation, Proposal #DMR-1104801, \$591,431, four years, June 15, 2011-August 31, 2018. Sole PI on grant (100% shared credit).

### ***Pending Research Support***

1. Epitaxial Electrodeposition of Wide Bandgap Semiconductors for Energy Conversion and Storage” Department of Energy, Office of Basic Energy Science, Division of Materials Sciences & Engineering, Synthesis & Processing Program, Proposal #DE-FG02-08ER46518, \$741,352, three years, June 1, 2021 – May 31, 2024. Sole PI on grant (100% shared credit).