

JOSHUA GALLAWAY

electrochemical engineer

josh@energy.cuny.edu

140th Street & Convent Ave, ST-314

New York, NY 10031

(212) 650-5063

EDUCATION

- Columbia University* PhD 2007
Department of Chemical Engineering MS 2004
- Advisor: Scott Calabrese Barton, PhD (Michigan State University, Department of Chemical Engineering and Material Science)
 - Graduation with distinction. Thesis Title: *Redox Polymer Mediation for Enzymatic Biofuel Cells*
- Case Western Reserve University* BSE 1997
Department of Chemical Engineering
- Summa cum laude
 - Sequences in Macromolecular Science & Engineering and English

POSTDOCTORAL APPOINTMENTS

- The Energy Institute, The City College of New York* 2009-present
Research Associate, Department of Chemical Engineering
- Director: Sanjoy Banerjee, PhD
- Columbia University* 2007-2009
Postdoctoral Scientist, Department of Chemical Engineering
- Advisor: Alan C. West, PhD

PUBLICATIONS

- von Gutfeld, R.J., **Gallaway, J.W.**, and West, A.C. (2010) "In Situ Immersion Plating of Copper and Nickel on Aluminum Using Laser Pulses for Oxide Removal" *Journal of the Electrochemical Society* 157(1) (in press).
- Gallaway, J.W.** and West, A.C. (2009) "The Effect of Acid on Superconformal Filling in 100 nm Trenches" *Journal of Vacuum Science and Technology B* 27(5), 2200-2205.
- Gallaway, J.W.**, Willey, M.J., and West, A.C. (2009) "Copper Filling of 100 nm Trenches using PEG, PPG, and a Triblock Copolymer as Plating Suppressors" *Journal of the Electrochemical Society* 156 (8) D287-D295.
- Hudak, N.H., **Gallaway, J.W.**, and Calabrese Barton, S.A. (2009) "Formation of Mediated Biocatalytic Cathodes by Electrodeposition of a Redox Polymer and Laccase" *Journal of Electroanalytical Chemistry* 629, 57-62.
- Gallaway, J.W.**, Willey, M.J., and West, A.C. (2009) "Acceleration Kinetics of PEG, PPG, and a Triblock Copolymer by SPS during Copper Electroplating" *Journal of the Electrochemical Society* 156(4) D146-D154.
- Gallaway, J.W.** and Calabrese Barton, S.A. (2009) "Effect of Redox Polymer Synthesis on a Mediated Enzyme Oxygen Cathode" *Journal of Electroanalytical Chemistry* 626, 149-155.

- Hudak, N.H., **Gallaway, J.W.**, and Calabrese Barton, S.A. (2009) "Mediated Biocatalytic Cathodes Operating on Gas-Phase Air and Oxygen in Fuel Cells" *Journal of the Electrochemical Society* 156 (1), B9-B15.
- Wheeldon, I.R., **Gallaway, J.W.**, Calabrese Barton, S.A., and Banta, S.A. (2008) "Electron-Conducting Hydrogels from Bifunctional Metallo-Polypeptides" *Proceedings of the National Academy of Sciences* 105 (40), 15275-15280.
- Gallaway, J.W.** and West, A.C. (2008) "PEG, PPG, and Their Triblock Copolymers as Suppressors in Copper Electroplating" *Journal of the Electrochemical Society* 155 (10), D632-D639.
- Gallaway, J.W.** and Calabrese Barton, S.A. (2008) "Kinetics of Redox Polymer-Mediated Enzyme Electrodes" *Journal of the American Chemical Society* 130, 8527-8536.
- Gallaway, J.W.**, Wheeldon, I.R., Rincon, R., Atanassov, P., Banta, S.A., and Calabrese Barton, S.A. (2008) "Oxygen-Reducing Enzyme Cathodes Produced from SLAC, a Small Laccase from *Streptomyces coelicolor*" *Biosensors and Bioelectronics* 23, 1229-1235.
- Calabrese Barton, S.A., Deng, W., **Gallaway, J.W.**, Levendovsky, S., Olson, T.S., Atanassov, P., Sorkin, M., Kaufman, A., and Gibbard, H.F. (2006) "Mixed-Feed Direct Methanol Fuel Cells: Materials and Design Solutions" *ECS Transactions* 1(6), 315-322.
- Calabrese Barton, S.A., **Gallaway, J.W.**, and Atanassov, P. (2004) "Enzymatic Fuel Cells for Implantable and Microscale Devices" *Chemical Reviews* 104, 4867-4886.

SELECTED PRESENTATIONS

- West, A.C. (speaker), **Gallaway, J.W.**, and Emekli, U. "Feature and Wafer Scale Current Distributions for Cu Plating for On-Chip Interconnects" The Electrochemical Society 215th Meeting, San Francisco CA, May 2009.
- Wiley, M.J. (speaker), **Gallaway, J.W.**, and West, A.C. "Copper Filling of 100 nm Features using PEG, PPG, and a Triblock Copolymer as Plating Suppressors" The Electrochemical Society 215th Meeting, San Francisco CA, May 2009.
- Gallaway, J.W.** (speaker), Wiley, M.J., and West, A.C. "PEG, PPG, and Their Triblock Copolymers as Suppressors in Copper Electroplating" The Electrochemical Society 214th Meeting, Honolulu HI, Oct. 2008.
- Wheeldon, I.R. (speaker), **Gallaway, J.W.**, Calabrese Barton, S.A., and Banta, S.A. "Electron-Conducting Hydrogels from Bifunctional Metallo-Polypeptides" The Electrochemical Society 213th Meeting, Phoenix AZ, May 2008.
- Gallaway, J.W.** (speaker) and Calabrese Barton, S.A. "High Performance Redox Polymer Films for Enzymatic Electrodes" The Electrochemical Society 212th Meeting, Washington DC, Oct. 2007.
- Ziegelbauer, J. (speaker), **Gallaway, J.W.**, Calabrese Barton, S.A., and Mukerjee, S. "In Situ XAS Investigations of Novel Osmium-Based Redox Polymer Mediators for Laccase-Based Biological Fuel Cell Applications" The Electrochemical Society 212th Meeting, Washington DC, Oct 2007.
- Gallaway, J.W.** (speaker) and Calabrese Barton, S.A. "Structure-Function Relationships in Redox Polymer-Enzyme Films for Biofuel Cell Applications" The Electrochemical Society 210th Meeting, Cancun, Mexico, Oct. 2006.

Calabrese Barton, S.A. (speaker), Deng, W., **Gallaway, J.W.**, Levendovsky, S., Olson, T.S., Atanassov, P., Sorkin, M., Kaufman, A., and Gibbard, H.F. (2005) "Mixed-Feed Direct Methanol Fuel Cells: Materials and Design Solutions" The Electrochemical Society 208th Meeting, Los Angeles CA, Oct. 2005.

Gallaway, J.W. (speaker) and Calabrese Barton, S.A. "Methanol Oxidation on High Surface Area Platinum-Ruthenium in the Presence of Oxygen" The Electrochemical Society 208th Meeting, Los Angeles CA, Oct. 2005.

TEACHING EXPERIENCE

Columbia University: Guest lecturer, Principles of Thermodynamics (CHEN 3010), Molecular Engineering and Product Design (CHEN 1040), and Engineering Applications of Electrochemistry (CHEN 4201)

Technical writing consultant, LeaderSHIFT, Inc.; Private tutor: university chemistry and mathematics, 2008-present.

AWARDS AND HONORS

Wallace Foundation Fellowship for Energy Research, 2009

Teaching Assistant Award, *Columbia University*, 2002 and 2003

Kennedy Award for Writing, *Case Western Reserve University*, 1997

PROFESSIONAL SERVICE

AD HOC MANUSCRIPT REVIEWS:

Journal of the Electrochemical Society

PROFESSIONAL MEMBERSHIPS

The Electrochemical Society

American Chemical Society