

Naval Research Laboratory: Fuel Cell Contaminants Publications

The following publications about the effect of contaminants on fuel cell performance and durability were authored by members of Karen Swider-Lyons' research group in the Alternative Energy Section, Chemistry Division, at the Naval Research Laboratory.

Refereed Journal Articles

1. Megan B. Sassin, Yannick Garsany, Benjamin D. Gould, and Karen E. Swider-Lyons, "[Fabrication Method for Laboratory-Scale High-Performance Membrane Electrode Assemblies for Fuel Cells](#)," *Analytical Chemistry* 89 (2017): 511-518.
2. Yunfeng Zhai, Olga Baturina, David E. Ramaker, Erik Farquhar, Jean St-Pierre, and Karen E. Swider-Lyons, "[Bromomethane Contamination in the Cathode of Proton Exchange Membrane Fuel Cells](#)," *Electrochimica Acta* 213 (2016): 482.
3. Yunfeng Zhai, Olga Baturina, David Ramaker, Erik Farquhar, Jean St-Pierre, and Karen Swider-Lyons, "[Chlorobenzene Poisoning and Recovery of Platinum-Based Cathodes in Proton Exchange Membrane Fuel Cells](#)," *Journal of Physical Chemistry C* 119 (2015): 20328.
4. Olga A. Baturina, Albert Epshteyn, Paul A. Northrup, and Karen E. Swider-Lyons, "[The Influence of Cell Voltage on the Performance of a PEM Fuel Cell in the Presence of HCl in Air](#)," *Journal of the Electrochemical Society* 161 (2014): F365-F372.
5. Olga A. Baturina, Benjamin D. Gould, Paul A. Northrup, and Karen E. Swider-Lyons, "[SO₂ adsorption products on Pt nanoparticles as a function of electrode potential and oxidative properties of carrier gas: In situ sulfur K-edge XANES approach](#)," *Catalysis Today* 205 (2013): 106-110.
6. Yannick Garsany, Sreya Dutta, and Karen E. Swider-Lyons, "[Effect of glycol-based coolants on the suppression and recovery of platinum fuel cell electrocatalysts](#)," *Journal of Power Sources* 216 (2012): 515-525.
7. Olga A. Baturina, Benjamin D. Gould, Anna Korovina, Yannick Garsany, Richard Stroman, and Paul A. Northrup, "[Products of SO₂ Adsorption on Fuel Cell Electrocatalysts by Combination of Sulfur K-Edge XANES and Electrochemistry](#)," *Langmuir* 27 (2011): 14930-14939.
8. Olga A. Baturina, Albert Epshteyn, Paul A. Northrup, and Karen E. Swider-Lyons, "[Insights into PEMFC Performance Degradation from HCl in Air](#)," *Journal of the Electrochemical Society* 158 (2011): B1198-B1205.
9. Olga A. Baturina, Benjamin D. Gould, Yannick Garsany, and Karen E. Swider-Lyons, "[Insights on the SO₂ poisoning of Pt₃Co/VC and Pt/VC fuel cell catalysts](#)," *Electrochimica Acta* 55 (2010): 6676-6686.

10. David E. Ramaker, Daniel Gatewood, Yannick Garsany, Anna Korovina, and Karen E. Swider-Lyons, "[Resolving Sulfur Oxidation and Removal from Pt and Pt₃Co Electrocatalysts Using in Situ X-ray Absorption Spectroscopy](#)," *Journal of Physical Chemistry C* 114 (2010): 11886-11897.
11. D. Pillay, M. D. Johannes, Yannick Garsany, and Karen E. Swider-Lyons, "[Poisoning of Pt₃Co Electrodes: A Combined Experimental and DFT Study](#)," *Journal of Physical Chemistry C* 114 (2010): 7822-7830.
12. Olga A. Baturina and Karen E. Swider-Lyons, "[Effect of SO₂ on the Performance of the Cathode of a PEM Fuel Cell at 0.5-0.7V](#)," *Journal of the Electrochemical Society* 156 (2009): B1423-B1430.
13. Yannick Garsany, Benjamin D. Gould, Olga A. Baturina, and Karen E. Swider-Lyons, "[Comparison of the Sulfur Poisoning of PBI and Nafion PEMFC Cathodes](#)," *Electrochemical and Solid-State Letters* 12 (2009): B138-B140.
14. Yannick Garsany, Benjamin D. Gould, Olga A. Baturina, and Karen E. Swider-Lyons, "[Oxygen Reduction Reaction Kinetics of SO₂-Contaminated Pt₃Co and Pt/Vulcan Carbon Electrocatalysts](#)," *Journal of the Electrochemical Society* 156 (2009): B848-B855.
15. Benjamin D. Gould, Olga A. Baturina, and Karen E. Swider-Lyons, "[Deactivation of Pt/VC proton exchange membrane fuel cell cathodes by SO₂, H₂S and COS](#)," *Journal of Power Sources* 188 (2009): 89-95.
16. D. Pillay and M. D. Johannes, "[Effect of S on Pt\(111\) and Pt₃Ni\(111\) Surfaces: A First Principles Study](#)," *Journal of Physical Chemistry C* 112 (2008): 1544-1551.
17. Yannick Garsany, Olga A. Baturina, and Karen E. Swider-Lyons, "[Impact of Sulfur Dioxide on the Oxygen Reduction Reaction at Pt/Vulcan Carbon Electrocatalysts](#)," *Journal of the Electrochemical Society* 154 (2007): B670-B675.
18. Karen E. Swider and Debra R. Rolison, "[Reduced Poisoning of Platinum Fuel-Cell Electrocatalysts Supported on Desulfurized Carbon](#)," *Electrochemical and Solid-State Letters* 3 (2000): 4-6.
19. Karen E. Swider and Debra R. Rolison, "[Catalytic Desulfurization of Carbon Black on a Platinum Oxide Electrode](#)," *Langmuir* 15 (1999): 3302-3306.
20. Karen E. Swider and Debra R. Rolison, "[The Chemical State of Sulfur in Carbon-Supported Fuel-Cell Electrodes](#)," *Journal of the Electrochemical Society* 143 (1996): 813-819.

Book Chapters

1. Olga A. Baturina, Yannick Garsany, Benjamin D. Gould, and Karen E. Swider-Lyons, "[Contaminant-Induced Degradation](#)," Chapter 8. Yuan, X.-Z., ed. *PEM Fuel Cell Failure Mode Analysis*. London: CRC Press, 2011: 199-241.

Conference Proceedings

1. Benjamin D. Gould, Yannick Garsany, and Karen E. Swider-Lyons, "[Deactivation and Recovery of Pt/C with Commercial Glycol-Based Coolants in Rotating Disk Electrodes and Membrane Electrode Assemblies](#)," *ECS Transactions* 64 (2014): 793-804.
2. Yannick Garsany, Olga A. Baturina, and Karen E. Swider-Lyons, "[Impact of SO₂ on the Kinetics of Pt₃Co/Vulcan Carbon Electrocatalysts for Oxygen Reduction](#)," *ECS Transactions* 11 (2007): 863-875.