

Viviane Schwartz

R&D Staff
Chemical Functionality Group
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Education

PUC-Rio de Janeiro, Brazil	Chemical Engineering	B.S., 1992
COPPE/Universidade Federal do Rio de Janeiro	Chemical Engineering	M.S., 1995
Virginia Polytechnic Institute and State University	Chemical Engineering	M.ChE, 1998
Virginia Polytechnic Institute and State University	Chemical Engineering	Ph.D., 2000

Research Interests

Study and development of catalytic materials for energy and fuel processes; study of carbon-based catalysts for selective oxidation reactions; study of carbide and nitride catalysts for hydroprocessing and bio-oil upgrading; study of metal and metal oxide catalysts for alternative fuel production and selective oxidation reactions; study of highly active and selective gold nano-catalysts for CO oxidation of value for automotive fuel cell applications; utilization of synchrotron techniques as a tool for unraveling the structure of nanomaterials.

Professional Experience

2008–p	R&D Staff, Chemical Functionality Group, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory (ORNL)
2003–2008	R&D Staff, Chemical Sciences Division, ORNL
2002–2003	Postdoctoral Research Associate, University of Delaware, Newark, Delaware
2000–2002	Postdoctoral Research Associate, ETH-Zuerich, Switzerland
1995–2000	Research Assistant, Virginia Polytechnic Institute and State University, Virginia

Professional and Synergistic Activities

2012	Symposium Organizer, “Novel Materials for Catalysis and Fuel Processing,” 243 rd ACS National Meeting & Exposition, Div. of Petroleum Chemistry, March 25–29, 2012, San Diego, CA
2010–p	Program Committee Member, ACS Division of Petroleum Chemistry
2010–p	Proposal Review Panel, Center for Functional Nanomaterials, Brookhaven National Laboratory
2009–p	Member, Invention Disclosure Review Committee, ORNL
2008–2009	Proposal Reviewer, Kentucky Science and Engineering Foundation
2007–2009	Member, Committee for Women, ORNL
2007	Member, International Advising Committee, 4 th San Luis Symposium on Surfaces, Interfaces, and Catalysis, Cuernavaca, Mexico
2007	Reviewer, National Science Foundation
2006–2009	Reviewer, Department of Energy (Basic Office of Energy Sciences; Small Business Innovation Research; Small Business Technology Transfer)
2006; 2009	Reviewer, Seed Money Proposals, ORNL
2004–2005	Member, Chemical Science Division Council, ORNL
2000; 2009	Dissertation Defense Committee Member, Military Institute of Engineering, April 2000, and Federal University of Rio de Janeiro, May 2009, Brazil
1998–p	Member, American Chemical Society
1992–1995	Member, Regional Council of Engineering and Architecture, Brazil

Peer Reviewer: *ACS Catalysis, Applied Catalysis, Carbon, Catalysis Communications, Catalysis Letters, Catalysis Today, Energy and Fuels, Fuel Processing & Technology, Industrial & Engineering Chemistry Research, Journal of American Chemical Society, Journal of Catalysis, Journal of Molecular Catalysis, Journal of Physical Chemistry, Spectroscopy Letters*

Patents:

C. Daniel, C. Tsouris, P.G. Datskos, R.D. Ott, N.V. Lavrik, V. Schwartz, A. Sabau, "Pulsed Photothermal Phase Transformation Control for Titanium Oxide Structures and Reversible Bandgap Shift for Solar Absorption, U.S. Patent Application No. 12/889,478 (2012).

Honors and Awards

2010 Award Recipient, "40 Under 40 in Science, Technology, Engineering and Mathematics Sponsored by the Hispanic Engineer and Information Technology Magazine
2010; 2009 Award Recipient, Key Contributor for Excellence in Service for the Invention Disclosure Review Committee, Partnership Directorate, ORNL
1995 Ph.D. Full Scholarship, Virginia Polytechnic Institute and State University, Sponsored by National Research Center, Brazil

Publications (Over 40 publications in refereed journals, Cited > 500 times, 1 Book Chapter) *Full Publication List follows CV*

Collaborators (Last 5 years; Outside ORNL): C. Barnes (University of TN-Knoxville); J. Chen (University of Delaware); B. Eichorn (University of Maryland); V. Gulians (University of Cincinnati); B. Jang (Texas A&M University-Commerce); C. Song (Pennsylvania State University); J. Spivey (Louisiana State University); C. Williams (University of South Carolina)

Graduate and Postdoctoral Advisors:

Ph.D. Advisor: Prof. S. T. Oyama (Virginia Polytechnic Institute and State University)
Postdoctoral Advisors: Prof. Roel Prins (ETH-Zurich, Switzerland); Prof. Jinguang Chen (University of Delaware)

Postgraduate-Scholar Sponsor:

Yu-Tung Tsai, ORNL, 2012–p
Hong Xie, ORNL, 2007–2010
Svetlana Bashkova, ORNL, 2005–2006
Xianxin Wu, ORNL, 2003–2005

PUBLICATIONS

Viviane Schwartz

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Books

N. A. Khan, J. R. Kitchin, V. Schwartz, K. Bulanim, J. G. Chen, "Novel Catalytic Properties of Bimetallic Surface Nanostructure," Chapter 2 in *Nanotechnology in Catalysis Volume 2*, Eds., B. Zhou, S. Hermans, and G. A. Somorjai, Springer Science+Business Media, Inc., New York, NY (2003).

Peer-Reviewed Publications:

- M. Gupta, V. Schwartz, S.H. Overbury, K. More, H.M. Meyer, III, and J.J. Spivey, "Novel Pulse Electrodeposited Co–Cu–ZnO Nanowire/tube Catalysts for C₁–C₄ Alcohols and C₂–C₆ (Except C₅) Hydrocarbons from CO and H₂," *Journal of Physical Chemistry C* **116** (20), 10924–10933 (2012).
- S.-H. Chai, J. Y. Howe, X. Wang, M. Kidder, V. Schwartz, M. L. Golden, S. H. Overbury, S. Dai, D.-E. Jiang, "Graphitic Mesoporous Carbon as a Support of Promoted Rh Catalysts for Hydrogenation of Carbon Monoxide to Ethanol," *Carbon* **50**(4), 1574-1582 (2012).
- W. Fu, J. Kiggans, S. H. Overbury, V. Schwartz, C. Liang, "Low-Temperature Exfoliation of Multilayer-Graphene Material from FeCl(3) and CH(3)NO(2) Co-Intercalated Graphite Compound," *Chemical Communications* **47**(18), 5265-5267 (2011).
- N. Kumar, K. Jothimurugesan, G. G. Stanley, V. Schwartz, J. J. Spivey, "In Situ FT-IR Study on the Effect of Cobalt Precursors on CO Adsorption Behavior," *Journal of Physical Chemistry C* **115**, 990–998 (2011).
- V. Schwartz, A. Campos, A. Egbebi, J. J. Spivey, S. H. Overbury, "EXAFS and FT-IR Characterization of Mn and Li Promoted Titania-Supported Rh Catalysts for CO Hydrogenation," *ACS Catalysis* **1**(10), 1298–1306 (2011).
- V. Schwartz, H. Xie, H. M. Meyer III, S. H. Overbury, C. Liang, "Oxidative Dehydrogenation of Isobutane on Phosphorous-Modified Graphitic Mesoporous Carbon," *Carbon* **49**, 659-668 (2011).
- A. Egbebi, J. J. Spivey, V. Schwartz, S. H. Overbury, "Effect of Li Promoter on Titania-Supported Rh Catalyst for Ethanol Formation from CO Hydrogenation," *Catalysis Today* **149**, 91-97 (2010).
- S. Bashkova, T. Armstrong, V. Schwartz, "Selective Catalytic Oxidation of Hydrogen Sulfide of Activated Carbons Impregnated with Sodium Hydroxide," *Energy and Fuels* **23**, 1674-1682 (2009).
- M. Li, Z. Wu, Z. Ma, V. Schwartz, D. R. Mullins, S. Dai, S. H. Overbury, "CO Oxidation on Au/FePO₄ Catalyst: Reaction Pathways and Nature of Au Sites," *Journal of Catalysis* **266**(1), 98-105 (2009).
- C. D. Liang, H. Xie, V. Schwartz, J. Howe, S. Dai, S. H. Overbury, "Open-Cage Fullerene-like Graphitic Carbons as Catalysts for Oxidative Dehydrogenation of Isobutane," *Journal of the American Chemical Society* **131**(22), 7735-7741 (2009).
- X. Sieve, V. Wang, V. Schwartz, J. C. Clark, X. Ma, S. H. Overbury, X. Xu, C. S. Song, "Infrared Study of CO₂ Sorption over "Molecular Basket" Sorbent Consisting of Polyethylenimine-Modified Mesoporous Molecular," *Journal of Physical Chemistry* **113**(1), 7260-7268 (2009).
- G. M. Veith, A. R. Lupini, S. Rashkeev, S. J. Pennycook, D. R. Mullins, V. Schwartz, C. A. Bridges, N. J. Dudney, "Thermal Stability and Catalytic Activity of Gold Nanoparticles Supported on Silica," *Journal of Catalysis* **262**, 92-101 (2009).
- H. Xie, Z. Wu, S. H. Overbury, C. Liang, V. Schwartz, "Investigation of the Selective Sites on Graphitic Carbons for Oxidative Dehydrogenation of Isobutane," *Journal of Catalysis* **267**(2), 158-166 (2009).
- B. Jang, M. Helleeson, C. Shi, A. Rondinone, V. Schwartz, C. Liang, S. H. Overbury, "Characterization of Al₂O₃ Supported Nickel Catalysts Derived from RF," *Topics in Catalysis* **49** (3–4), 145 (2008).

- N. R. Shiju, A. J. Rondinone, D. R. Mullins, V. Schwartz, S. H. Overbury, and V. V. Gulians, "XANES Study of Hydrothermal Mo-V-Based Mixed Oxide. M1-Phase Catalysts for the (Amm)oxidation of Propane," *Chemistry of Materials* **20**(21), 6611-6616 (2008).
- H. Xie, J. Y. Howe, V. Schwartz, J. R. Monnier, C. T. Williams, H. J. Ploehn, "Hydrodechlorination of 1,2-Dichloroethane Catalyzed by Dendrimer-Derived Pt-Cu/SiO₂ Catalysts," *Journal of Catalysis* **259** (1), 111-122 (2008).
- S. H. Zhou, H. F. Yin, V. Schwartz, Z. Wu, D. R. Mullins, B. Eichhorn, S. H. Overbury, and S. Dai, "In Situ Phase Separation of NiAu Alloy Nanoparticles for Preparing Highly Active Au/NiO CO Oxidation Catalysts," *ChemPhysChem* **9**(17), 2475-2479 (2008).
- S. Bashkova, F. S. Baker, X. X. Wu, T. R. Armstrong, V. Schwartz, "Activated Carbon Catalyst for Selective Oxidation of Hydrogen Sulphide: On the Influence of Pore Structure, Surface Characteristics, and Catalytically-Active Nitrogen," *Carbon* **45**(6), 1354-1363 (2007).
- V. Schwartz, D. R. Mullins, W. Yan, H. Zhu, S. Dai, S. H. Overbury, "Structural Investigation of Au Catalysts on TiO₂-SiO₂ Supports—On the Nature of the Local Structure of Ti and Au Atoms by EXAFS and XANES," *Journal of Physical Chemistry C* **111**, 17322-17332 (2007).
- S. H. Overbury, V. Schwartz, D. R. Mullins, W. Yan, S. Dai, "Evaluation of the Au Size Effect: CO Oxidation Catalyzed by Au/TiO₂," *Journal of Catalysis* **241**, 56-95 (2006).
- X. Wu, A. K. Kercher, V. Schwartz, S. H. Overbury, T. R. Armstrong, "Activated Carbons for Selective Catalytic Oxidation of Hydrogen Sulfide to Sulfur," *Carbon* **43**(5), 1087-1090 (2005).
- X. Wu, V. Schwartz, S. H. Overbury, T. R. Armstrong, "Desulfurization of Gaseous Fuels Using Activated Carbons as Catalysts for the Selective Oxidation of Hydrogen Sulfide," *Energy & Fuels* **19**, 1774-1782 (2005).
- W. F. Yan, B. Chen, S. M. Mahurin, V. Schwartz, D. R. Mullins, A. R. Lupini, S. J. Pennycook, S. Dai, S. H. Overbury, "Preparation and Comparison of Supported Gold Nanocatalysts on Anatase, Brookite, Rutile, and P25 Polymorphs of TiO₂ for Catalytic Oxidation of CO," *The Journal of Physical Chemistry B* **109**(21), 10676-10685 (2005).
- V. Schwartz, D. R. Mullins, W. Yan, B. Chen, S. Dai, S. H. Overbury, "XAS Study of Au Supported on TiO₂: Influence of Oxidation State and Particle Size on the Catalytic Activity," *The Journal of Physical Chemistry B* **108**, 15782-15790 (2004).
- V. Schwartz, M. Sun, R. Prins, "An EXAFS Study of the Influence of Fluorine on the Structure of Sulfided W/Al₂O₃ and NiW/Al₂O₃ Catalysts," *Journal of Physical Chemistry B* **106**, 2597-2605 (2002).
- V. Schwartz, R. Prins, X. Wang, W. M. H. Sachtler, "Characterization by EXAFS of Co/MFI Catalysts Prepared by Sublimation," *Journal of Physical Chemistry B* **106**, 7210-7217 (2002).
- V. Schwartz, J. Chen, S. T. Oyama, "Supported Bimetallic Nb-Mo Carbide: Synthesis, Characterization, and Reactivity," *Journal of Physical Chemistry B* **104**, 8800-8806 (2000).
- V. Schwartz, V. T. da Silva, S. T. Oyama, Push-Pull Mechanism of Hydrodenitrogenation over Carbide and Sulfide Catalysts, *Journal of Molecular Catalysis A: Chemical* **163**(1-2), 251-268 (2000).
- V. Schwartz, S. T. Oyama, "Reaction Network of Pyridine Hydrodenitrogenation over Carbide and Sulfide Catalysts," *Journal of Molecular Catalysis A: Chemical* **163**(1-2), 269-282 (2000).
- V. Schwartz, V. L. T. da Silva, J. G. Chen, S. T. Oyama, "Mechanism of HDN over Mo and Nb-Mo Carbide Catalysts," *Studies of Surface Science and Catalysis* **130**(A), 467-472, (2000).
- V. L. S. T. da Silva, M. Schmal, V. Schwartz, S. T. Oyama, "Synthesis of Mo/Nb Mixed Carbide," *Journal of Material Research* **13**(7), 1977-1988 (1998).
- V. Schwartz, S. T. Oyama, "Study of Niobium Oxynitride: Synthesis, Characterization, and Reactivity," *Chemistry of Materials* **9**, 3052-3059 (1997).