Dr. Wesley Sattler

Ph.D.
Senior Consultant

Dr. Wesley Sattler (Wes) is a Senior Consultant at Engineering Systems Inc. (ESi), bringing deep expertise in chemistry, materials, catalysis, separations, and complex industrial. With more than 20 years of R&D experience, from a Ph.D. in inorganic chemistry to advanced scientific roles at ExxonMobil and The Dow Chemical Company, Wes delivers a powerful combination of rigorous technical analysis and practical judgment to complex scientific, operational, and logistical challenges.

Wes built a notable R&D track record, contributing to many technology areas, including hydrogen production, sustainable aviation fuel (SAF) development, carbon capture, and polymer synthesis, formulation, and characterization for both industrial and specialty applications, spanning corrosion-resistant coatings, traffic-paint technologies, and advanced electronic materials.

Wes's consulting practice is rooted in extensive industrial research experience, enabling him to diagnose fundamental technical issues, critically evaluate data, and translate complex findings into defensible, actionable conclusions. He excels at bridging the gap between scientific detail and real-world decision making, helping clients navigate uncertainty and make informed choices.

Wes is the coauthor of 38 peer reviewed publications, an inventor on 6 granted U.S. patents, with >10 additional U.S. patent applications pending. Wes is known for quickly mastering new technical domains, identifying business critical needs, and delivering collaborative, results-driven solutions that improve performance, reduce inefficiencies, and manage technical risk.

Education

Postdoctoral Fellow, Chemistry, Caltech, 2015
Ph.D. Chemistry, Columbia University, 2012
M.S. Chemistry, Columbia University, 2010
B.S. Chemistry with Honors, Binghamton University, 2007

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Areas of Specialization

- Chemical reactions, analysis and materials testing
- Materials (synthesis, formulation, characterization, & scale-up)
- Polymer science & coatings
- Heterogeneous catalysis
- Spectroscopy (e.g., FTIR)
- Photochemistry & electrochemistry
- Kinetics
- Thermal analysis (e.g., TGA, DSC, DTA, TMA)
- Chromatography (e.g., GPC, GC)
- Carbon (CO_2) capture
- Renewable fuels (e.g., SAF)
- Hydrogen production
- Reactor/process fouling
- Safety & hazard analysis
- Intellectual property
- Project management
- Data automation/analysis
- High throughput experimentation

Positions Held

Engineering Systems Inc., Lincoln Park, New Jersey
- Senior Consultant, Materials: Chemistry 2026 – present

ExxonMobil Technology & Engineering Company, Annandale, New Jersey
- Advanced Research Associate & Portfolio Leader, Materials & Catalysis, 2024 – 2026
- Research Associate & Project Leader, Materials & Catalysis, 2022 – 2023
- Senior Researcher, Process Technology Department, 2019 – 2021

The Dow Chemical Company, Collegeville, Pennsylvania
- Associate Research Scientist & Project Leader, Core R&D, 2017 – 2019

The Dow Chemical Company, Marlborough, Massachusetts
- Senior Chemist, Electronic Materials R&D, 2015 – 2017

California Institute of Technology (Caltech), Pasadena, California
- Postdoctoral Fellow, Chemistry and Chemical Engineering, 2012 – 2015

Columbia University, New York, New York
- Doctoral Student, Chemistry

Professional Affiliations/Honors

American Chemical Society
- Member

American Institute of Chemical Engineers
- Member

ExxonMobil
- Technology & Development Novel Hydrogen Production Award, 2025
- Technology & Development Direct Air Capture Achievement Award, 2024
- Research & Development Excellence Award, 2022
- Research & Engineering Active Materials Characterization Award, 2021

Dow
- Safety Excellence Award, 2018
- Chemical Company Excellence Award, 2015, 2016, 2017, 2018, and 2019
- Electronic Materials Emerging Technologies Milestone Achievement Award, 2017

California Institute of Technology (Caltech)
- NSF Center for Chemical Innovation Postdoctoral Fellowship, 2012 – 2015

Columbia University
- Louis Hammett Award for Excellence in Graduate Research, 2012
- Reaxys PhD Prize Finalist, 2012
- Presidential Teaching Award Finalist, 2009, 2010, and 2011

Project Experience

- Design, synthesis, and characterization of photosensitizers used for electron-transfer reactions.
- Design, synthesis, and formulation of photoimagable dielectric material for semiconductor packaging.
- Synthesis of solution and emulsion polymers for industrial coating applications (e.g., impact resistance, corrosion resistance, stain resistance, high adhesion, and traffic paint rapid-setting).
- Novel high-temperature active materials for applications in blue hydrogen production.
- Bimetallic heterogenous catalysis/process development for sustainable aviation fuel (SAF) production.
- Material and process development for Direct Air Capture (DAC).

Granted US Patents

- **US12187924B2** "Polyorganosiloxane having poly(meth)acrylate groups and methods…", 2025
- **US12030845B2** "Isomerization of normal paraffins", 2024
- **US11926795B2** "Catalyst systems for reforming in cyclic flow reactors", 2024
- **US11891407B2** "Methods of synthesizing and recycling metal-organic framework systems", 2024
- **US11859133B2** "Size-reversing materials for reforming in cyclic flow reactors", 2024
- **US11745168B2** "Bifunctional metal oxides and paraffin isomerization therewith", 2023

Publications

Alexandra. T. Barth, Javier Fajardo Jr., **Wesley Sattler**, Jay R. Winkler, and Hary B. Gray "Electronic Structures and Photoredox Chemistry of Tungsten(0) Arylisocyanides" *Acc. Chem. Res.* **2023**, *56*, 1978.

Wesley Sattler, Matthew C. D. Carter, Nicholas J. Irick, Jim DeFelippis, and Ralph C. Even "End-Group Control in the Radical Polymerization of Methyl Methacrylate with tert-Butyl Peroxypivalate Initiator in the Presence of Thiol Chain Transfer Agents" *ACS Appl. Polym. Mater*. **2020**, *2*, 3936.

Wesley Sattler, Daniel G. Shlian, David Sambade, Gerard Parkin "Synthesis and structural characterization of bis(2-pyridylthio)(p-tolylthio)methyl zinc complexes and the catalytic hydrosilylation of CO_2." *Polyhedron*, **2020**, *187*, 114542.

Ibrahim Eryazici, Matthew C. D. Carter, **Wesley Sattler**, Jian Yang, Scott Willis, Francois J. Huby, Irina Peshenko, and Patricia Ansems-Bancroft "Gas-Generating Polymer Particles: Reducing the Decomposition Temperature of Poly(*tert*-Butyl Methacrylate) Side Chains Using an Encapsulated Acid Catalyst Approach." *ACS Appl. Polym. Mater*. **2020**, *2*, 5179.

Peilin Yang, Wei Gao, Tianlan Zhang, Matthias Pursch, Jim Luong, **Wesley Sattler**, Anurima Singh and Scott Backer "Two-dimensional liquid chromatography with active solvent modulation for studying monomer incorporation in copolymer dispersants." *J. Sep. Sci.* **2019**, *42*, 2805.

Emmanuelle Despagnet-Ayoub, Wesley W. Kramer, **Wesley Sattler**, Aaron Sattler, Paul J. LaBeaume, James W. Thackeray, James F. Cameron, Thomas Cardolaccia, Aaron A. Rachford, Jay R. Winkler and Harry B. Gray "Triphenylsulfonium topophotochemistry." *Photochem. & Photobio. Sci.* **2018**, *17*, 27.

Kana Takematsu, Sara A. M. Wehlin, **Wesley Sattler**, Jay R. Winkler and Harry B. Gray "Two-photon spectroscopy of tungsten(0) arylisocyanides using nanosecond-pulsed excitation." *Dalton Trans.* **2017***, 46*, 13188.

Wesley Sattler, Aaron A. Rachford, Paul J. LaBeaume, Suzanne M. Coley, James W. Thackeray, James F. Cameron, Astrid M. Müller, Jay R. Winkler and Harry B. Gray "Driving Force Dependence of Electron Transfer from Electronically Excited $[Ir(COD)(\mu\text{-}Me_2pz)]_2$ to Photo-acid Generators." *J. Phys. Chem. A.* **2017**, *121*, 7572.

Serge Ruccolo, **Wesley Sattler**, Yi Rong and Gerard Parkin "Modulation of Zn-C Bond Lengths Induced by Ligand Architecture in Zinc Carbatrane Compounds." *J. Am. Chem. Soc.* **2016**, *138*, 14542 – 14545.

Yue Hu, Anthony P. Shaw, Hairong Guan, Jack R. Norton, **Wesley Sattler** and Yi Rong "Synthesis and Resolution of Chiral Ruthenium Complexes Containing the 1-Me-3-PhCp Ligand." *Organometallics* **2016**, *35*, 39.

Wesley Sattler, Serge Ruccolo, Mahnaz Rostami Chaijan, Tawfiq Nasr Allah and Gerard Parkin "Hydrolysilylation of Aldehydes and Ketones Catalyzed by a Terminal Zinc Hydride Complex, $[\kappa^3\text{-Tptm}]ZnH$." *Organometallics* **2015**, *34*, 4717.

Hana Kvapilová, **Wesley Sattler**, Aaron Sattler, Igor V. Sazanovich, Ian P. Clark, Michael Towrie, Harry B. Gray, Stanislav Záliš and Antonin Vlček "Electronic Excited States of Tungsten(0) Arylisocyanides." *Inorg. Chem*. **2015**, *54*, 8518.

Wesley Sattler, Lawrence M. Henling, Jay R. Winkler and Harry B. Gray "Bespoke Photosensitizers: Tungsten Arylisocyanides." *J. Am. Chem. Soc.* **2015**, *137*, 1198.

Gang Li, Deven P. Estes, Jack R. Norton, Serge Ruccolo, Aaron Sattler and **Wesley Sattler** "Dihydrogen Activation by Cobaloximes with Various Axial Ligands." *Inorg. Chem*. **2014**, *53*, 10743.

Judith R. C. Lattimer, James D. Blakemore, **Wesley Sattler**, Sheraz Gul, Ruchira Chatterjee, Vittal Yachandra, Junko Yano, Bruce S. Brunschwig, Nathan S. Lewis and Harry B. Gray "Assembly, Characterization, and Electrochemical Properties of Immobilized Metal Bipyridyl Complexes on Silicon(111) Surfaces." *Dalton Trans.* **2014**, *43*, 15004.

James D. Blakemore, Emilia S. Hernandez, **Wesley Sattler**, Bryan M. Hunter, Lawrence M. Henling, Bruce S. Brunschwig and Harry B. Gray "Pentamethylcyclopentadienyl Rhodium Complexes." *Polyhedron*, **2014**, *84*, 14.

Wesley Sattler and Gerard Parkin "Reduction of bicarbonate and carbonate to formate in molecular zinc complexes." *Catal. Sci. Technol*. **2014**, *4*, 1578.

Wesley Sattler, Serge Ruccolo and Gerard Parkin "Synthesis, Structure and Reactivity of a Terminal Organozinc Fluoride Compound: Hydrogen Bonding, Halogen Bonding and Donor-Acceptor Interactions." *J. Am. Chem. Soc.* **2013***, 135,* 18714*.*

Michael S. Eberhart, Jack R. Norton, Ashley Zuzek, **Wesley Sattler** and Serge Ruccolo "Electron Transfer from Hexameric Copper Hydrides." *J. Am. Chem. Soc.* **2013***, 135,* 17262*.*

Wesley Sattler, Maraia E. Ener, James D. Blakemore, Aaron A. Rachford, Paul J. LaBeaume, James W. Thackeray, James F. Cameron, Jay R. Winkler and Harry B. Gray "Generation of Powerful Tungsten Reductants by Visible Light Excitation." *J. Am. Chem. Soc.* **2013**, *135*, 10614.

Wesley Sattler, Joshua H. Palmer, Christy C. Bridges, Lucy Joshee, Rudolfs K. Zalups and Gerard Parkin "Structural characterization of 1,3-propanedithiols that feature carboxylic acids: Homologues of mercury chelating agents." *Polyhedron*, **2013**, *64*, 268.

Neena Chakrabarti, **Wesley Sattler** and Gerard Parkin "Structural Characterization of Tris(pyrazolyl)-hydroborato and Tris(2-pyridylthio)methyl Lithium Compounds: Lithium in Uncommon Trigonal Pyramidal and Trigonal Monopyramidal Coordination Environments." *Polyhedron*, **2013**, *58*, 235.

Ling Li, Kathleen E. Kristian, Arthur Han, Jack R. Norton and **Wesley Sattler** "Synthesis and Structural Characterization of Cp_2- and $(CpMe)_2$-ligated Titanaaziridines and Titanaoxiranes with Fast Enantiomer Interconversion Rates." *Organometallics* **2012**, *31,* 8218*.*

Wesley Sattler and Gerard Parkin "Zinc Catalysts for On Demand Hydrogen Generation and Carbon Dioxide Functionalization." *J. Am. Chem. Soc.* **2012**, *134*, 17462.

Deven P. Estes, Jack R. Norton, Steffen Jockusch and **Wesley Sattler** "Mechanisms by which Alkynes React with $CpCr(CO)_3H$. Application to Radical Cyclization." *J. Am. Chem. Soc*. **2012**, *134*, 15512.

Yue Hue, Ling Li, Anthony P. Shaw, Jack R. Norton, **Wesley Sattler** and Yi Rong "Synthesis, Electrochemistry and Reactivity of New Iridium(III) and Rhodium(III) Hydrides." *Organometallics*, **2012**, *31*, 5058.

Wesley Sattler and Gerard Parkin "Structural characterization of zinc bicarbonate compounds relevant to the mechanism of action of carbonic anhydrase." *Chem. Sci*. **2012**, *3*, 2015.

Wesley Sattler and Gerard Parkin "Low Temperature NMR Spectroscopic Investigation of a Zinc Bicarbonate Compound: Thermodynamics of Bicarbonate Formation by Insertion of CO_2 into the Zinc Hydroxide Bond of $[Tp^{Bu^t,Me}]ZnOH$." *Polyhedron*, **2012**, *32*, 41.

Scott A. Snyder, Daniel S. Treitler, Alexandria P. Brucks and **Wesley Sattler** "A General Strategy for the Stereocontrolled Preparation of Diverse 8- and 9-Membered *Laurencia*-Type Bromoethers." *J. Am. Chem. Soc*. **2011**, *133*, 15898.

Wesley Sattler and Gerard Parkin "Synthesis, Structure, and Reactivity of a Mononuclear Organozinc Hydride Complex: Facile Insertion of CO_2 into a Zn-H Bond and CO_2-Promoted Displacement of Siloxide Ligands." *J. Am. Chem. Soc.* **2011**, *133*, 9708.

Chien-Yang Chiu, Bumjung Kim, Alon A. Gorodetsky, **Wesley Sattler**, Sujun Wei, Aaron Sattler, Michael Steigerwald and Colin Nuckolls "Shape-shifting in contorted dibenzotetrathienocoronenes." *Chem. Sci.* **2011**, *2*, 1480.

Ahmed Al-Harbi, **Wesley Sattler**, Aaron Sattler and Gerard Parkin "Synthesis and structural characterization of tris(2-oxo-1-*tert*-butylimidazolyl) and tris(2-oxo-1-methylbenzimidazolyl)hydroborato complexes: a new class of tripodal oxygen donor ligand." *Chem. Commun.* **2011**, *47*, 3123.

Alon A. Gorodetsky, Chien-Yang Chiu, Theanne Schiros, Matteo Palma, Marshall Cox, Zhang Jia, **Wesley Sattler**, Ioannis Kymissis, Michael Steigerwald and Colin Nuckolls "Reticulated Heterojunctions for Photovoltaic Devices." *Angew. Chem. Int. Ed. Engl.* **2010***, 49,* 7909.

Olaf Zeika, Yongjun Li, Steffen Jockusch, Gerard Parkin, Aaron Sattler, **Wesley Sattler** and Nicholas J. Turro "Synthesis of Polynitroxides Based on Nucleophilic Aromatic Substitution." *Org. Lett.* **2010**, *12*, 3696.

Wesley Sattler and Gerard Parkin "Synthesis of Transition Metal Isocyanide Compounds from Carbonyl Complexes *via* Reaction with Li[Me_3SiNR]." *Chem. Commun.* **2009**, 7566.

Keliang Pang, Joshua S. Figueroa, Ian A. Tonks, **Wesley Sattler** and Gerard Parkin "2-Mercapto-1-t-butylimidazolyl as a Bridging Ligand: Synthesis and Structural Characterization of Nickel and Palladium Paddlewheel Complexes." *Inorg. Chim. Acta*, **2009**, *362*, 4609.

Wesley Sattler, Kevin Yurkerwich and Gerard Parkin "Molecular Structures of Protonated and Mercurated Derivatives of Thimerosal." *Dalton Trans.* **2009**, 4327.

Jonathan G. Melnick, Kevin Yurkerwich, Daniela Buccella, **Wesley Sattler** and Gerard Parkin "Molecular Structures of Thimerosal (Merthiolate) and Other Arylthiolate Mercury Alkyl Compounds." *Inorg. Chem.* **2008**, 47, 6421.

Wesley Sattler and Vanessa McCaffrey "Mentorship Component: Being a Chemist in a Multidisciplinary World: Beyond Graduate School." Gordon Research Seminar, Electron Donor-Acceptor Interactions. Salve Regina University, Newport, RI, **2016**.

Wesley Sattler "Development of Tungsten Photosensitizers." Gordon Research Seminar, Electron Donor-Acceptor Interactions. Salve Regina University, Newport, RI, **2014**.

Wesley Sattler "Tungsten Photosensitizers." Inorganic/Organometallics Seminar. California Institute of Technology, Pasadena, CA, **2014**.

Wesley Sattler "Generation of Powerful Tungsten Reductants by Visible Light Excitation." Gordon Research Seminar, Organometallic Chemistry. Salve Regina University, Newport, RI, **2013**.

Wesley Sattler “Generation of Powerful Tungsten Reductants by Visible Light Excitation.” Inorganic/Organometallics Seminar. California Institute of Technology, Pasadena, CA, **2013**.

Wesley Sattler “Multifunctional Zinc Catalysts.” Awards Ceremony, Hammett Award Lecture. Columbia University, Department of Chemistry, New York, NY, **2012**.