Dr. Wesley Sattler

PhD
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 processes. 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
PhD Chemistry, Columbia University, 2012
MS Chemistry, Columbia University, 2010
BS 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, NMR, UV-vis)
- 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 modular photosensitizers used for energy-transfer and electron-transfer processes (e.g., solar fuels).
- Design, synthesis, and formulation of photoimagable, tough dielectric polymeric materials for semiconductor packaging.
- Failure and fracture analysis of dielectric materials used in photolithographic processes.
- 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).
- Refractory high-temperature catalytic redox-active materials for application in steam methane reforming and blue hydrogen production.
- Bimetallic heterogenous catalysis/process development for sustainable aviation fuel (SAF) production.
- Mitigation of reactor fouling resulting from unwanted polymer byproducts formed during heterogeneous catalysis operations.
- Catalyst and process development for improving octane rating of lower-value paraffin and olefin-containing feedstocks.
- Adsorbent material development and process development for Direct Air Capture (DAC).

Publications

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

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

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

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

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

"Triphenylsulfonium topophotochemistry," 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, Photochem. & Photobio Sci., 17, 27, 2018.

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

"Driving Force Dependence of Electron Transfer from Electronically Excited $[Ir(COD)(\mu\text{-}Me_2pz)]_2$ to Photo-acid Generators," **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, J. Phys. Chem. A., 121, 7572, 2017.

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

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

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

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

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

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

"Assembly, Characterization, and Electrochemical Properties of Immobilized Metal Bipyridyl Complexes on Silicon(111) Surfaces," 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, Dalton Trans., 43, 15004, 2014.

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

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

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

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

“Generation of Powerful Tungsten Reductants by Visible Light Excitation,” **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, J. Am. Chem. Soc., 135, 10614, 2013.

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

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

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

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

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

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

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

“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 $[Tp^{Bu^t,Me}]ZnOH$,” **Wesley Sattler** and Gerard Parkin, Polyhedron, 32, 41, 2012.

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

“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,” **Wesley Sattler** and Gerard Parkin J. Am. Chem. Soc., 133, 9708, 2011.

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

"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," Ahmed Al-Harbi, **Wesley Sattler**, Aaron Sattler and Gerard Parkin, Chem. Commun., 47, 3123, 2011.

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

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

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

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

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

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

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

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

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

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

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

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

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
- **US20250025866A1** “Palladium Catalyst Systems For Reforming In Cyclic Flow Reactors”, 2025
- **US20250033026A1** “Polyamine sorbents on amorphous high pore volume supports”, 2025
- **US20250121316A1** “Oxidatively stable organosilicates for CO2 capture”, 2025
- **US20240116817A1** “ Ceramic monolith composition”, 2024
- **US20240247002A1** “Flocculation and Rapid Filtration Of Metal Organic Frameworks”, 2024
- **US20240261758A1** “Spherical Metal-Organic Frameworks Using Alginate”, 2024
- **US20230087627A1** “Methods of Making Metal-Organic Framework Composites”, 2023
- **US20190112400A1** “Polymers from bis-arylcyclobutene group containing monomers that cure through other groups and methods for making the same”, 2019