

Exponent®
Engineering & Scientific Consulting

Naomi Clayman, Ph.D.

Principal Scientist | Polymers & Chemistry
Menlo Park
+1-650-688-7153 | nclayman@exponent.com

Professional Profile

Dr. Clayman consults on a wide variety of proactive and reactive matters related to the chemistry of polymers and materials.

Trained as a chemist, Dr. Clayman leverages her knowledge of chemistry and polymer science in projects related to medical devices, consumer electronics, pharmaceuticals, contamination analysis, and material compatibility. She has assisted clients with materials specifications, formulation changes, product safety assessments, end-use testing, and failure analysis.

Dr. Clayman has extensive experience in the characterization of materials, with a focus on analytical chemistry, using tools such as FTIR, GC-MS, LC-MS, and NMR to investigate species on a molecular level, to GPC and MALDI-ToF to investigate larger polymeric materials. She has experience with electroactive polymers, porous materials, biodegradable polymers, and adhesives, among other common commercial plastics used in consumer products, building materials such as polymeric pipe, and implantable medical devices.

Prior to joining Exponent, Dr. Clayman was a fellow of the Center for Molecular Analysis and Design (CMAD) at Stanford University. Her research focused on stimulus responsive metallopolymers that she leveraged for the capture of hazardous gases, such as nitrogen dioxide. She also worked on utilizing organocatalysis and metal-driven catalysis for the synthesis of mechanically robust, biodegradable polymers.

Academic Credentials & Professional Honors

Ph.D., Chemistry, Stanford University, 2019

B.S., Chemistry, University of Chicago, 2014

Professional Affiliations

American Chemical Society

Co-Chair, Distinguished Women in Science Colloquia, Stanford University, 2016-2019

Society of Plastics Engineers (SPE)

Publications

Lipinski, B. M.; Walker, K. L.; Clayman, N. E.; Morris, L. S.; Jugovic, T. M. E.; Roessler, A. G.; Getzler, Y. D. Y. L.; MacMillan, S. N.; Zare, R. N.; Zimmerman, P. M.; Waymouth, R. M.; Coates, G. W. Mechanistic

Study of Isotactic Poly(propylene oxide) Synthesis using a Tethered Bimetallic Chromium Salen Catalyst. ACS Catalysis, 2020, 10, 15, 8960-8967.

Clayman, N. E.; Manumpil, M. A.; Matson, B. D.; Wang, S.; Slavney, A. H.; Sarangi, R.; Karunadasa, H. I.; Waymouth, R. M. Reactivity of NO2 with Porous and Conductive Copper Azobispyridine Metallopolymers. Inorganic Chemistry, 2019, 58, 16, 10856-10860.

Clayman, N. E.; Morris, L. S.; LaPointe, A. M.; Keresztes, I.; Waymouth, R. M.; Coates, G. W. Dual Catalysis for the Copolymerisation of Epoxides and Lactones. Chemical Communications, 2019, 55, 6914-6917.

Clayman, N. E.; Manumpil, M. A.; Umeyama, D.; Rudenko, A. E.; Karunadasa, H. I.; Waymouth, R. M. Carving out Pores in Redox-Active One-Dimensional Coordination Polymers. Angewandte Chemie International Edition, 2018, 57, 44, 14585-14588.

Rudenko, A. E.; Clayman, N. E.; Walker, K. L.; Maclaren, J. K.; Zimmerman, P. M.; Waymouth, R. M. Ligand Induced Reductive Elimination of Ethane from Azopyridine Palladium Dimethyl Complexes. Journal of the American Chemical Society, 2018, 140, 36, 11408-11415.

Rudenko, A. E.; Clayman, N. E.; Maclaren, J. K.; Waymouth, R. M. Reversible Electropolymerization of Nickel Complexes Based on Redox-Mediated Ligand Exchange, ChemistrySelect, 2016, 1, 13, 3491-3496.

Presentations

A. Oelker, N. Clayman, M. Kratochvil, J. Vargas. Failure Analysis of Hydrogels: Case Studies in the Biomedical Space. Society for Biomaterials, Atlanta, 2026.

S. Lovald, N. Clayman, H. Razi, S. Kalyan, C. Stabler, J. Vargas, J. Clevenger. Analysis Framework for Wearable Injector Systems to Improve Functionality, Safety, and Reliability. Universe of Pre-Filled Syringes and Injection Devices Conference, Vienna, 2025.

D. Harrier, N. Clayman, J. Vargas. Process and Aging Considerations for Polymeric Catheter Devices. SPE ANTEC, Philadelphia, 2025.

N. Clayman. Biocompatibility and Chemical Safety in Wearables. MDM West, SPE MiniTec, Anaheim, 2025.

N. Clayman. Biocompatibility and Chemical Safety in Wearables. Smithers WEAR Conference, San Diego, 2023.

N. Clayman, M. A. Manumpil, H. Karunadasa, R. Waymouth. Copper Azobispyridine Metallopolymers: Stimulus Controlled Modulation and Toxic Gas Reactivity. Johnson Symposium, Stanford University, 2018.

N. Clayman, M. A. Manumpil, H. Karunadasa, R. Waymouth. Copper Azobispyridine Metallopolymers: Stimulus Controlled Modulation and Toxic Gas Reactivity. CMAD Symposium, Stanford University, 2018.

N. Clayman, A. Rudenko, R. Waymouth. Reversible Electropolymerization of Nickel Azobispyridine Complexes Based on Redox Mediated Ligand Exchange. American Chemical Society National Meeting, San Francisco, 2017.

N. Clayman, A. E. Rudenko, M. A. Manumpil, H. Karunadasa, R. Waymouth. Metallopolymerns of Nickel and Copper Azobispyridine: Stimulus Controlled Synthesis and Modulation. Johnson Symposium, Stanford University, 2016.

A. E. Rudenko, N. Clayman, R. Waymouth. Redox-Induced Reversible Ligand Exchange Using the Azopyridine-Nickel Platform. Johnson Symposium, Stanford University, 2015.

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