



**Exponent<sup>®</sup>**  
Engineering & Scientific Consulting

## Cheyenne Peltier, Ph.D., PMP

Scientist | Polymers & Chemistry  
Natick  
+1-508-903-4660 | [cpeltier@exponent.com](mailto:cpeltier@exponent.com)

### Professional Profile

Dr. Peltier is a polymer chemist with specialized expertise in the synthesis and characterization of membranes for use in a variety of electrochemical conversion and storage devices. Her research and professional experience include extensive work with water electrolyzers, fuel cells, and redox flow batteries. She has focused on organic synthesis and polymer synthesis, as well as the processing of polymers to create membranes with targeted properties. In addition, Dr. Peltier has developed and conducted comprehensive mechanical and chemical stability testing to ensure membrane performance and durability in demanding operational environments. Beyond her work in energy-related technologies, she has contributed to the development of polymers for innovative applications such as drug delivery systems, carbon capture processes, and the use of bio-derived monomer feedstocks.

Dr. Peltier brings extensive experience spanning both academic and industrial settings, where she has developed accelerated stress testing protocols for membrane materials. Her technical expertise includes organic synthesis, polyolefin and membrane synthesis, and advanced characterization techniques such as NMR, FTIR, GPC, ISE, EIS, and tensile testing. This broad skill set underpins her ability to develop and evaluate membranes for diverse applications.

She contributed to water electrolyzer development as a Membrane Scientist at Envision Energy, applying her expertise to further innovations in energy conversion systems. As a postdoctoral researcher at the National Renewable Energy Laboratory, Dr. Peltier focused on developing bio-derivable monomer feedstocks, supporting the advancement of sustainable polymer technologies.

For her graduate research at Cornell University, Dr. Peltier synthesized quaternary ammonium-functionalized polyethylene membranes, investigating their stability for use in anion-exchange membrane fuel cells and electrolyzers, as well as non-aqueous redox flow batteries. Her research contributed to the understanding and improvement of membrane performance in cutting-edge electrochemical devices.

During her time at Stanford University, Dr. Peltier focused on synthesizing biodegradable polymers for drug delivery applications, advancing the potential for targeted and efficient therapeutic delivery. As an intern at Pfizer, she contributed to oncology formulation development, gaining practical experience in pharmaceutical research and development.

### Academic Credentials & Professional Honors

Ph.D., Chemistry and Chemical Biology, Cornell University, 2023

M.S., Chemistry, Cornell University, 2020

B.S., Chemistry, Stanford University, 2018

Graduate Diversity and Inclusion Award – Exemplary Service 2022

Bauer Scholarship Award 2022

Center for Alkaline-based Energy Solutions Research Assistantship 2021

## Prior Experience

Membrane Scientist & Project Manager, Envision Energy, 2024-2026

Postdoctoral Researcher, National Renewable Energy Laboratory (NREL), 2023-2024

R&D Intern, Pfizer-La Jolla, 2016

## Patents

WO2025029243A2, Suppressing crossover in non-aqueous redox flow batteries with polyethylene-based anion exchange membranes, February 2025 (Minteer S, Rhodes ZK, Milam A, Carroll E, Coates GW, Peltier CR, Macbeth AJ)

WO2024173933A3, Cationic polymers and methods of making same, and uses thereof, August 2024 (Coates GW, Hsu JH, Peltier CR, Haynes CA, Noonan KJT)

WO2022159848A1, Quaternary ammonium-functionalized polymers and methods of making and using same, July 2022 (Coates GW, You W, Peltier CR)

## Publications

Hsu, J. H.; Haynes, C. A.; Macbeth, A. J.; Girbau, R.; Borowski, J. E.; Reilly, M. A.; Taylor, A. L.; Peltier, C. R.; Birch, C.; Noonan, K. J. T.; Coates, G. W.; Fors, B. P. "[User-Friendly Living Coordination-Insertion Polymerizations with Broad Functional Group Tolerance](#)." J. Am. Chem. Soc. 2025; 147:40676-40685.

Macbeth, A. J.; Markovich, D.; Taylor, A. L.; Flanagan, E. B.; Borowski, J. E.; Hsu, J. H.; Peltier, C. R.; Muller, D. A.; Fors, B. P.; Noonan, K. J. T.; Coates, G. W. "[Designing Highly Conductive Anion Exchange Membranes: Tuning Domain Continuity with ABC Block Copolymer Self-Assembly](#)." J. Am. Chem. Soc. 2025; 147:16471-16480.

Hsu, J. H.; Peltier, C. R.; Treichel, M.; Gaitor, J.; Girbau, R.; Macbeth, A. J.; Noonan, K. J. T.; Coates, G. W.; Fors, B. P. "[Direct Insertion Polymerization of Ionic Monomers: Rapid Production of Anion Exchange Membranes](#)." Angew. Chem. Int. Ed. 2023; 62:e202304778.

Peltier, C. R.; You, W.; Fackovic Volcanjk, D.; Li, Q.; Macbeth, A. J.; Abruña, H. D.; Coates, G. W. "[Quaternary Ammonium-Functionalized Polyethylene-Based Anion Exchange Membranes: Balancing Performance and Stability](#)." ACS Energy Lett. 2023; 8:2365-2372.

Li, Q.; Molina Villarino, A.; Peltier, C. R.; Kim, M.-J.; Zixiao, S.; Krumov, M. R.; Yang, Y.; Lei, C.; Macbeth, A. J.; Rodríguez-Calero, G. G.; Hugar, K. M. Soto, J.; Yu, S.-H.; Xiao, L.; Zhuang, L.; Muller, D. A.; Coates, G. W.; Abruña, H. D. "[Exchange Membrane Water Electrolysis: The Future of Hydrogen](#)." J. Phys. Chem. C 2023; 127:7901-7912.

Lu, X.; You, W.; Peltier, C. R.; Coates, G. W.; Abruña, H. D. "[Influence of Ion-exchange Capacity on Solubility, Mechanical Properties and Mass Transport of Anion Exchange Ionomers for Alkaline Fuel Cells](#)." ACS Appl. Energy Mater. 2023; 6:876-884.

Peltier, C. R.; Rhodes, Z.; Macbeth, A. J.; Milam, A.; Carroll, E.; Coates, G. W.; Minteer, S. D.

["Suppressing Crossover in Redox Flow Batteries with Polyethylene-Based Anion Exchange Membranes."](#)  
ACS Energy Lett. 2022; 7:4118-4128.

Yang, Y.; Peltier, C. R.; Zeng, R.; Schimmenti, R.; Li, Q.; Huang, X.; Yan, Z.; Potsi, G.; Selhorst, R.; Lu, X.; Xu, W.; Tader, M.; Soudackov, A. V.; Zhang, H.; Krumov, M.; Murray, E.; Xu, P.; Hitt, J.; Xu, L.; Ko, H.-Y.; Ernst, B. G.; Bundschu, C.; Luo, A.; Markovich, D.; Hu, M.; He, C.; Wang, H.; Fang, J.; DiStasio, R. A.; Kourkoutis, L. F.; Singer, A.; Noonan, K. J. T.; Xiao, L.; Zhuang, L.; Pivovar, B. S.; Zelenay, P.; Herrero, E.; Feliu, J. M.; Suntivich, J.; Giannelis, E. P.; Hammes-Schiffer, S.; Arias, T.; Mavrikakis, M.; Mallouk, T. E.; Brock, J. D.; Muller, D. A.; DiSalvo, F. J.; Coates, G. W.; Abruña, H. D. ["Electrocatalysis in Alkaline Media and Alkaline Membrane-Based Energy Technologies."](#) Chem. Rev. 2022; 122:6117-6321.

You, W.; Ganley, J. M.; Ernst, B. G.; Peltier, C. R.; Ko, H.-Y.; DiStasio, R. A.; Knowles, R. R.; Coates, G. W. ["Expeditious synthesis of aromatic-free piperidinium-functionalized polyethylene as alkaline anion exchange membranes."](#) Chem. Sci. 2021; 12:3898-3910.

You, W.; Hugar, K. M.; Selhorst, R. C.; Treichel, M.; Peltier, C. R.; Noonan, K. J. T.; Coates, G. W. ["Degradation of Organic Cations under Alkaline Conditions."](#) J. Org. Chem. 2021; 86:254-263.

## Presentations

Peltier, C. R. Polyethylene-based Anion Exchange Membranes for Energy Conversion and Storage Devices. Oral Presentation, Bauer Scholarship Award Lecture, Stanford University, Stanford, CA, 2023.

Peltier, C. R. Poly(terphenylene) Anion Exchange Membranes: The Effect of Backbone Structure on Morphology and Membrane Property. Oral Presentation, Poly-PMSE Journal Club, Cornell University, Ithaca, NY, 2022.

Peltier, C. R. An Introduction to Alkaline Anion Exchange Membranes. Oral Presentation, Poly-PMSE Seminar Series, Cornell University, Ithaca, NY, 2021.

Peltier, C. R., You, W., Ganley, J. M., Ernst, B. G., Ko, H.-Y., Distasio, R. A., Knowles, R. R., Coates, G. W. Ammonium-Functionalized Polyethylene as Alkaline Anion Exchange Membranes. Oral Presentation, Graduate Student and Postdoc Summer Seminar Series, Cornell University, Ithaca, NY, 2021

Peltier, C. R., Macbeth, A. J., You, W., Ernst, B. G., Ko, H.-Y., Yan, Z., Hitt, J., Venkatesh, A., Colletta, M., Padgett, E., Abruña, H. D., Muller, D. A., Kourkoutis, L. F., Mallouk, T. E., Distasio, R. A., Coates, G. W. The Influence of Architecture on Transport in Alkaline Media. Poster Presentation, EFRC-Hub-CMS-CCS Principal Investigators Meeting, Cornell University, Ithaca, NY, 2021.

Peltier, C. R., Macbeth, A. J., You, W., Ernst, B. G., Ko, H.-Y., Yan, Z., Hitt, J., Venkatesh, A., Colletta, M., Padgett, E., Abruña, H. D., Muller, D. A., Kourkoutis, L. F., Mallouk, T. E., Distasio, R. A., Coates, G. W. The Influence of Architecture on Transport in Alkaline Media. Poster Presentation, Center for Alkaline-based Energy Solutions ERFC Midterm review, Washington D.C., 2020.

Peltier, C. R., You, W., Padgett, E., MacMillan, S. N., Muller, D. A., Coates, G. W. Highly Conductive and Chemically Stable Alkaline Anion Exchange Membranes with Imidazolium Cations. Poster Presentation, Center for Alkaline-based Energy Solutions Principal Investigators Meeting, Cornell University, Ithaca, NY, 2019.

Peltier, C. R., McClellan, R. L., Blake, T. R., Waymouth, R. M. Highly Active Catalyst for Low Temperature Ring-Opening Polymerizations. Poster Presentation, University of Washington Molecular Engineering Summer Undergraduate Symposium, University of Washington, Seattle, WA, 2017.

Peltier, C. R., Flanagan, J., Waymouth, R. M. Structure and Energetics of Cyclic Disulfide Ring Opening. Poster Presentation, Stanford Chemistry Department Undergraduate Poster Presentation, Stanford University, Stanford, CA, 2015.

## Peer Reviews

Journal of the American Chemical Society