Name: Peter V. Bonnesen
Center for Nanophase Materials Sciences
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Position Title: R&D Staff
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Education:
Lafayette College, Easton, PA., B.S. (ACS Certified) 1983 Chemistry
University of California at Los Angeles, Ph.D. 1989 Inorganic Chemistry

Professional Experience:

2006-present	Research Staff, Macromolecular Nanomaterials Group, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory
1993-2013	Research Staff, Chemical Separations Group, Chemical Sciences Division, Oak Ridge National Laboratory
1991-1993	Postdoctoral Research Associate, University of California at Berkeley
1989-1991	Research Scientist, Specialty Industrial Polymers Division, Rohm and Haas Company, Spring House, PA

Professional and Synergistic Activities:

2014-2015	Co-Guest Editor, *Molecules* (*Special Issue* - "Deuterated Molecules and Polymers for Neutron Studies")
2005–2018	Editorial Board, *Solvent Extraction and Ion Exchange*
1983–present	Member: American Chemical Society

Honors and Awards:

2021	Secretary of Energy Achievement Award, as a member of the "Molecular design and analysis to inform therapeutics related to COVID-19" (Molecular Design) project sponsored by the DOE National Virtual Biotechnology Laboratory (NVBL)
2020	Federal Laboratory Consortium (FLC) 2020 National Technology Transfer Award: Impact Award: *A Catalyst to Produce Ethanol, Reduce Reliance on Fossil Fuels*
2019	R&D IR-100 Award: "Voltanol: Electrochemical Conversion of Carbon Dioxide to Ethanol"
2013	DOE Secretary's Achievement Award (as member of Salt Waste Disposal Technologies Team) for "The Development and Implementation of a High-Level Salt Waste Processing Technology"
2004	R&D IR-100 Award: "Highly Selective, Regenerable Perchlorate Treatment System"
2002	Battelle Technical Council Science & Technology Challenges Competition Winner
1999	Lockheed Martin Energy Research Corporation Valuable Invention Award
1999	Lockheed Martin Research Corporation Development Awards (2)
1994	Martin Marietta Energy Systems Technology Transfer Award
1984	Department of Chemistry Teaching Award, University of California at Los Angeles

Current Research Interests:
1) Synthesis of novel small molecules, particularly those of pharmaceutical interest
2) Stable isotope labeling of small molecules, monomers, and polymers
3) Nuclear Magnetic Resonance studies

Selected Peer-Reviewed Publications (Author of more than 80 articles in refereed journals and books):

D. W. Kneller, H. Li, G. Phillips, K. L. Weiss, Q. Zhang, M. A. Arnould, C. B. Jonsson, S. Surendranathan, J. Parvathareddy, M. P. Blakeley, L. Coates, J. M. Louis, P. V. Bonnesen,* and A. Kovalevsky*, "Covalent narlaprevir- and boceprevir-derived hybrid inhibitors of SARS-CoV-2 main protease", *Nat. Commun.* **2022**, *13*, 2268 https://doi.org/10.1038/s41467-022-29915-z

B. Hu, J.-M. Carrillo, L. Collins, K. S. Silmore, J. Keum, P. V. Bonnesen, Y. Wang, S. Retterer, R. Kumar*, and B. S. Lokitz*, "Modular Approach for the Synthesis of Bottlebrush Diblock Copolymers from Poly(Glycidyl Methacrylate)-*block*-Poly(Vinyldimethylazlactone) Backbones," *Macromolecules*, **2022**, *55*, 488-497.

C. Ma, Z. Xiao, P. V. Bonnesen, L. Liang, A. A. Puretzky, J. Huang,* W. Lu, K. Hong, J. Bernholc, and A.-P. Li*, "On-surface cyclodehydrogenation Reaction Pathway Determined by Selective Molecular Deuterations", *Chemical Science*, **2021**, *12*, 15637-15644.

D. W. Kneller, H. Li, S. Galanie, G. Phillips, A. Labbé, K. L. Weiss, Q. Zhang, M. A. Arnould, A. Clyde, H. Ma, A. Ramanathan, M. S. Head, L. Coates, J. M. Louis, P. V. Bonnesen* and A. Kovalevsky*, "Structural, electronic and electrostatic determinants for inhibitor binding to subsites S1 and S2 in SARS-CoV-2 main protease", *J. Med. Chem,* **2021**, *64*, 17366-17383.

Y. Yuan, H. Li, W. Leite, Q. Zhang, P. V. Bonnesen, J. J. Labbé, K. L. Weiss, S. V. Pingali, K. Hong, V. S. Urban, S. I. Salmon and H. M. O'Neill*, "Biosynthesis and characterization of deuterated chitosan in filamentous fungus and yeast", *Carbohydr. Polym.* **2021**, *257*, 117637.

L. Li, T. Li, M. M. L. Arras, P. V. Bonnesen, X. Peng, W. Li, K. Hong*, "Chain arrangements of selectively deuterated Poly(ε-caprolactone) copolymers as revealed by neutron scatterings", *Polymer* **2020**, *193*, 122375.

Y.-X. Zhu, E.-C. Li, K. Shen, X. Hang, P. V. Bonnesen, K. Hong, H.-H. Zhang, and W. Huang, "Intramolecular Catalyst Transfer over Sterically Hindered Arenes in Suzuki Cross-Coupling Reactions", *Asian J. Org. Chem.* **2019**, *8*, 1506-1512.

L. Li, M. M. L. Arras, T. Li, W. Li, D. Chang, J. K. Keum, P. V. Bonnesen, S. Qian, X. Peng, B. Lee, and K. Hong, "Alternating Crystalline Lamellar Structures from Thermodynamically Miscible Poly(ε-caprolactone) H/D Blends Polymer," *Polymer*, **2019**, *175*, 320-328.

L. Li, M. M. L. Arras, T. Li, W. Li, D. Chang, J. Keum, P. V. Bonnesen, X. Peng, and K. Hong, "Isotope Effects on the Crystallization Kinetics of Selectively Deuterated Poly(ε-caprolactone)", *Journal of Polymer Science, Part B: Polymer Physics*, **2019**, *57*, 771-779.

D. Chang, T. Li, L. Li, J. Jakowski, J. Huang, J. K. Keum, B. Lee, P. V. Bonnesen, M. Zhou, S. Garashchuk, B. G. Sumpter, and K. Hong, "Selectively Deuterated Poly(ε-caprolactone)s: Synthesis and Isotope Effects on the Crystal Structures and Properties", *Macromolecules* **2018**, *51*, 9393-9404

Y. Song, D. Johnson, R. Peng, D. K. Hensley, P. V. Bonnesen, L. Liang, J. Huang F. Yang, Fei Zhang, R. Qiao, A. P. Baddorf, T. J. Tschaplinski, N. L. Engle, M. C. Hatzell, Z. Wu, D. A. Cullen, H. M. Meyer III, B. G. Sumpter, and A. J. Rondinone*, "A physical catalyst for the electrolysis of nitrogen to ammonia", *Science Advances* **2018** Apr; 4(4): e1700336.

Y. Song, R. Peng, D. Hensley, P. V. Bonnesen, L. Liang, Z. Wu, H. M. Meyer III, M. Chi, C. Ma, B. Sumpter, and A. J. Rondinone*, "High-Selectivity Electrochemical Conversion of CO_2 to Ethanol using a Copper Nanoparticle/N-doped Graphene Electrode", *ChemistrySelect.* **2016**, 1, 6055-6061.

Selected Issued Patents (of 13 granted)
J. Yang, P. V. Bonnesen, and K. Hong, "Methods for the Synthesis of Deuterated Acrylate Salts" U.S. Patent 8,829,238 B2, September 9, 2014.

K. Hong, J. Yang, and P. V. Bonnesen, "Methods for the Synthesis of Deuterated Vinyl Pyridine Monomers", U.S. Patent 8,658,802, February 25, 2014.

P. V. Bonnesen, B. A. Moyer, and R. A. Sachleben, "Fluoro-alcohol Phase Modifiers and Process for Cesium Solvent Extraction," U. S. Patent 6,566,561, May 20, 2003.

Collaborators (previous 3 years):
Leighton Coates (STS, ORNL)
Marcus Foston (Washington University)
Andrii Kovalevskyi (NSD, ORNL)
Amit Naskar (CSD, ORNL)
Raktim Roy (UF Scripps Biomedical Research)