

Peter V. Bonnesen

R&D Staff
Joint Appointment
Macromolecular Nanosciences Group
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Education

Lafayette College, Easton, PA	Chemistry	B.S. (ACS certified), 1983
University of California at Los Angeles	Inorganic Chemistry	Ph.D., 1989

Research Interests

Research interests include the design and synthesis of deuterated monomers for specialty polymers; materials for nanophase materials research; ligands and extractants used in separations science; characterization of molecules and macromolecules using Nuclear Magnetic Resonance spectroscopy; self-assembling metal-organic frameworks; and elucidation of reaction mechanisms in organic, organometallic, and inorganic syntheses.

Professional Experience:

2006-present	Research Staff, Macromolecular Nanosciences Group, Center for Nanophase Materials Sciences, Oak Ridge National Laboratory (Joint Appointment)
1993-present	Research Staff, Chemical Separations Group, Chemical Sciences Division, Oak Ridge National Laboratory
1991-1993	Postdoctoral Associate (with Kenneth N. Raymond), University of California at Berkeley
1989-1991	Research Scientist, Specialty Industrial Polymers Division, Rohm and Haas Company, Spring House, PA

Professional and Synergistic Activities

2011-present	Editorial Board, <i>ISRN Chemical Engineering</i>
2005-present	Editorial Board, <i>Solvent Extraction and Ion Exchange</i>
1983-present	Member: American Chemical Society

Honors and Awards

2004	R&D IR-100 Award, for "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

Selected Peer-Reviewed Publications (Author of more than 60 articles in refereed journals and books):

J. Yang, K. Hong, and P. V. Bonnesen, "A method for preparing sodium acrylate-d₃, a useful and stable precursor for deuterated acrylic monomers," *J. Labelled Compd. Radiopharm.* **2011**, *54*, 743-748

V. M. Prabhu, S. Kang, R. J. Kline, D. M. DeLongchamp, D. A. Fischer, W. Wu, S. K. Satija, P. V. Bonnesen, J. Sha, C. K. Ober. "Characterization of the non-uniform reaction in chemically-amplified calix[4]resorcinarene molecular resist thin films," *Aust. J. Chem.*, **2011**, *64*, 1065-1073.

A. Pramanik, B. Thompson, T. Hayes, K. Tucker, D. R. Powell, P. V. Bonnesen, E. D. Ellis, K. S. Lee, H. Yu, and Md. A. Hossain, "Seven-coordinate anion complex with a tren-based urea: Binding discrepancy of hydrogen sulfate in solid and solution states," *Org. Biomol. Chem.* **2011**, *9*, 4444-4447.

J. Sha, J.-K. Lee, S. Kang, V. M. Prabhu, C. L. Soles, P. V. Bonnesen, and C. K. Ober, "Architectural Effects on Acid Reaction-Diffusion Kinetics in Molecular Glass Photoresists," *Chem. Mater.* **2010**, 22, 3093-3098.

F. Loustau-Chartez, R. M. Robeson, R. Custelcean, R. A. Sachleben, and P. V. Bonnesen, "2,2,3,3,11,11,12,12-Octamethyl-1,4,7,10,13-Pentaoxacyclohexadecane: Improved Synthesis and Crystal Structure with NaSCN," *Tetrahedron Lett.* **2009**, 50, 2936-2938.

R. Custelcean, J. Bosano, P. V. Bonnesen, V. Kertesz, and B. P. Hay, "Computer-Aided Design of a Sulfate-Encapsulating Receptor," *Angew. Chem. Int. Ed.* **2009**, 48, 4025-4029.

R. Custelcean, N. L. Engle, and P. V. Bonnesen, "Crystalline Hydrogen-Bonded Nanocolumns of Cyclic Thiourea Octamers," *Cryst. Eng. Comm.* **2007**, 9, 452-455.

H. Luo, S. Dai, P. V. Bonnesen, and A. C. Buchanan III, "Separation of Fission Products Based on Ionic Liquids: Task-Specific Ionic Liquids Containing an Aza-Crown Ether Fragment," *J. Alloys Compd.* **2006**, 418, 195-199.

V. I. Boiadjiev, G. M. Brown, L. A. Pinnaduwege, G. Goretzki, P. V. Bonnesen, T. Thundat, "Photochemical hydrosilylation of 11-undecenyltriethylammonium bromide with hydrogen-terminated Si surfaces for the development of robust microcantilever sensors for Cr(VI)," *Langmuir*, **2005**, 21, 1139-1142.

N. L. Engle, P. V. Bonnesen, B. A. Tomkins, L. H. Delmau, and B. A. Moyer, "Synthesis and Properties of Calix[4][arene-bis-[4-2-ethylhexyl]benzo-crown-6]: A Cesium Extractant with Improved Solubility," *Solvent Extr. Ion Exch.* **2004**, 22, 611-636.

M. G. Gorbunova, P. V. Bonnesen, N. L. Engle, E. Bazelaire, L. H. Delmau, and B. A. Moyer, "New Amino-Functionalized 1,3-Alternate Calix[4]arene-bis- and Mono-(benzo-crown-6 ethers) for pH-Switched Cesium Nitrate Extraction," *Tetrahedron Lett.* **2003**, 44, 5397-5401.

P. V. Bonnesen, L. H. Delmau, B. A. Moyer, and G. J. Lumetta "Development of Effective Solvent Modifiers for the Solvent Extraction of Cesium from Alkaline High-Level Tank Waste," *Solvent Extr. Ion Exch.*, **2003**, 21(2), 141-170.

C. R. Duchemin, N. L. Engle, P. V. Bonnesen, T. J. Haverlock, L. H. Delmau, and B. A. Moyer, "Solvatochromic Solvent Polarity Measurements of Alcohol Solvent Modifiers and Correlation with Cesium Extraction Strength," *Solvent Extr. Ion Exch.* **2001**, 19(6), 1037-1058.

P. V. Bonnesen, L. H. Delmau, B. A. Moyer, and R. A. Leonard "A Robust Alkaline-Side CSEX Solvent Suitable for Removing Cesium from Savannah River High Level Waste," *Solvent Extr. Ion Exch.* **2000**, 18, 1079-1108.

P. V. Bonnesen, G. M. Brown, S. D. Alexandratos, L. B. Bavoux, D. J. Presley, V. Patel, R. Ober, and B. A. Moyer, "Development of Bifunctional Anion Exchange Resins with Improved Selectivity and Sorptive Kinetics for Peractin. Batch-Equilibrium Experiments," *Environ. Sci. Technol.* **2000**, 34, 3761-3766.

Selected Patents (9 granted)

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.

B. A. Moyer, R. A. Sachleben, P. V. Bonnesen, and D. J. Presley, "Calixarene Crown Ether Solvent Composition and Use Thereof for Extraction of Cesium from Alkaline Waste Solutions," U. S. Patent 6,174,503, January 16, 2001.

S. D. Alexandratos, G. M. Brown, P. V. Bonnesen, and B. A. Moyer, "Bifunctional Anion-Exchange Resins with Improved Selectivity and Exchange Kinetics," U. S. Patent 6,059,975, May 9, 2000.

Graduate and Postdoctoral Advisors:

Graduate Advisor: William H. Hersh, Queens College of CUNY;

Postdoctoral Advisor: Kenneth N. Raymond, University of California at Berkeley

Total Postdocs Advised: 3