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Education:
University Münster, Germany (Prof. Richter) Ph.D.1995 Physical Chemistry
University Münster, Germany Diplom (M.S. equivalent) Magna Cum Laude 1992 Chemistry

Professional Experience:

2020-2021	Section Head, Large Scale Structures Section, Oak Ridge National Laboratory
2019-2020	Group Leader, Large Scale Structures Group, Oak Ridge National Laboratory
2017-2018	Senior R&D Staff, Neutron Scattering Division, Oak Ridge National Laboratory
2015-2016	Interim Director, Biology and Soft Matter Division, Oak Ridge National Laboratory
2012-2017	Group Leader, Energy and Environment Group, Oak Ridge National Laboratory
2002-2011	R&D Staff, Center for Structural Molecular Biology, Oak Ridge National Laboratory
1999-2002	Beam Line Scientist, European Synchrotron Radiation Facility, France
1997-1999	Postdoctoral Research Scientist, Argonne National Laboratory
1995-1996	Postdoctoral Research Scientist, Robert Bosch GmbH, Germany
1991-1995	Graduate Research Assistant, FZ-Jülich, Germany

Professional Activities, Honors, Awards:
Member of the American Crystallographic Association (ACA), American Chemical Society, Neutron Scattering Society of America
Secretary/Treasurer 2012, ACA-Small Angle Scattering Special Interest Group
Co-organized Small-Angle Scattering Workshops at the ACA SAS Workshops 2008 and 2015
Organizing Committee, International Conference on Neutrons in Biology 2009, Santa Fe, NM
Chair 2006, ACA-Small Angle Scattering Special Interest Group
Program Committee, ACA 2006 Annual Meeting, Honolulu, Hawaii
Organizer and co-chair of ACA 2006 Annual Meeting sessions “Polymer Science and Technology” and “Bio-Macromolecular Assemblies”, and co-chair of ACA 2004 session “Materials For the 21st Century”
Organizer of small angle scattering session and workshop of the 2005 and 2013 SNS/HFIR user meeting
Reviewer for *Journal of Polymer Science, Journal of Applied Crystallography, Langmuir, Macromolecules, The Journal of Physical Chemistry, Acta Crystallographica D*
Robert's Prize, best paper published in *Phys. Med. Biol.* in 2002
Leibfried-Preis FZ-Jülich 1996 (outstanding PhD research and presentation to lay public)
Federation of the German Chemical Industry honor 1984 (first place graduate in chemistry major)

Publications (h-index 39):
1. Yuan, Y.; Li, H.; Leite, W.; Zhang, Q.; Bonnesen, P. V.; Labbé, J. L.; Weiss, K. L.; Pingali, S. V.; Hong, K.; Urban, V. S., Biosynthesis and characterization of deuterated chitosan in filamentous fungus and yeast. *Carbohydrate Polymers* **2021,** *257*, 117637.
2. Yao, X.; Avery, B.; Bobrek, M.; Debeer-Schmitt, L.; Geng, X.; Gregory, R.; Guyotte, G.; Harrington, M.; Hartman, S.; He, L., A Unified User-Friendly Instrument Control and Data Acquisition System for the ORNL SANS Instrument Suite. *Applied Sciences* **2021,** *11* (3), 1216.
3. Yang, Y.; Kozlovskaya, V.; Dolmat, M.; Song, Y.; Qian, S.; Urban, V. S.; Cropek, D.; Kharlampieva, E., Temperature controlled transformations of giant unilamellar vesicles of amphiphilic triblock copolymers synthesized via microfluidic mixing. *Applied Surface Science Advances* **2021,** *5*, 100101.

4. Urban, V. S.; Heller, W. T.; Katsaras, J.; Bras, W., Soft Matter Sample Environments for Time-Resolved Small Angle Neutron Scattering Experiments: A Review. *Applied Sciences* **2021,** *11* (12), 5566.
5. Sharma, V.; Hayes, D.; Urban, V.; O'Neill, H.; Tyagi, M.; Mamontov, E., Melittin exerts opposing effects on short-and long-range dynamics in bicontinuous microemulsions. *Journal of Colloid and Interface Science* **2021,** *590*, 94-102.
6. Hayes, D. G.; Anunciado, D. B.; Ye, R.; Williams, R. N.; O'Neill, H. M.; Pingali, S. V.; Urban, V. S., Incorporation of Membrane Proteins Into Bicontinuous Microemulsions Through Winsor-III System-Based Extraction. *Journal of Surfactants and Detergents* **2021**.
7. Smith, M. D.; Pingali, S. V.; Elkins, J. G.; Bolmatov, D.; Standaert, R. F.; Nickels, J. D.; Urban, V. S.; Katsaras, J.; Davison, B. H.; Smith, J. C., Solvent-induced membrane stress in biofuel production: molecular insights from small-angle scattering and all-atom molecular dynamics simulations. *Green Chemistry* **2020,** *22* (23), 8278-8288.
8. Astner, A. F.; Hayes, D. G.; Pingali, S. V.; O'Neill, H. M.; Littrell, K. C.; Evans, B. R.; Urban, V. S., Effects of soil particles and convective transport on dispersion and aggregation of nanoplastics via small-angle neutron scattering (SANS) and ultra SANS (USANS). *PLoS One* **2020,** *15* (7), e0235893.
9. Pingali, S. V.; Smith, M. D.; Liu, S.-H.; Rawal, T. B.; Pu, Y.; Shah, R.; Evans, B. R.; Urban, V. S.; Davison, B. H.; Cai, C. M., Deconstruction of biomass enabled by local demixing of cosolvents at cellulose and lignin surfaces. *Proceedings of the National Academy of Sciences* **2020**.
10. Yang, Y.; Alford, A.; Kozlovskaya, V.; Zhao, S.; Joshi, H.; Kim, E.; Qian, S.; Urban, V.; Cropek, D.; Aksimentiev, A., Effect of Temperature and Hydrophilic Ratio on the Structure of Poly (N-vinylcaprolactam)-block-poly (dimethylsiloxane)-block-poly (N-vinylcaprolactam) Polymersomes. *ACS applied polymer materials* **2019,** *1* (4), 722-736.
11. Stingaciu, L.-R.; o'Neill, H. M.; Liberton, M.; Pakrasi, H. B.; Urban, V. S., Influence of Chemically Disrupted Photosynthesis on Cyanobacterial Thylakoid Dynamics in Synechocystis sp. PCC 6803. *Scientific reports* **2019,** *9* (1), 1-9.
12. Shrestha, U. R.; Juneja, P.; Zhang, Q.; Gurumoorthy, V.; Borreguero, J. M.; Urban, V.; Cheng, X.; Pingali, S. V.; Smith, J. C.; O'Neill, H. M., Generation of the configurational ensemble of an intrinsically disordered protein from unbiased molecular dynamics simulation. *Proceedings of the National Academy of Sciences* **2019,** *116* (41), 20446-20452.
13. Sharma, V.; Hayes, D.; Gupta, S.; Urban, V.; O'Neill, H.; Pingali, S.; Ohl, M.; Mamontov, E., Incorporation of melittin enhances interfacial fluidity of bicontinuous microemulsions. *The Journal of Physical Chemistry C* **2019,** *123* (17), 11197-11206.
14. Rai, D. K.; Gurusaran, M.; Urban, V.; Aran, K.; Ma, L.; Li, P.; Qian, S.; Narayanan, T. N.; Ajayan, P. M.; Liepmann, D., Structural determination of enzyme-Graphene nanocomposite Sensor Material. *Scientific reports* **2019,** *9* (1), 1-11.
15. Kozlovskaya, V.; Liu, F.; Yang, Y.; Ingle, K.; Qian, S.; Halade, G. V.; Urban, V. S.; Kharlampieva, E., Temperature-responsive polymersomes of poly (3-methyl-N-vinylcaprolactam)-block-poly (N-vinylpyrrolidone) to decrease doxorubicin-induced cardiotoxicity. *Biomacromolecules* **2019,** *20* (10), 3989-4000.
16. Kang, T. H.; Compton, B. G.; Heller, W. T.; Qian, S.; Smith, G. S.; Urban, V. S.; Duty, C. E.; Do, C., Potentials with small-angle neutron scattering technique for understanding structure–property relation of 3D-printed materials. *Polymer Engineering & Science* **2019,** *59* (s2), E65-E70.
17. Dergunov, S. A.; Richter, A. G.; Kim, M. D.; Pingali, S. V.; Urban, V. S.; Pinkhassik, E., Deciphering and Controlling Structural and Functional Parameters of the Shells in Vesicle-Templated Polymer Nanocapsules. *Langmuir* **2019,** *35* (40), 13020-13030.

18. Astner, A.; Hayes, D.; O'Neill, H.; Evans, B.; Pingali, S.; Urban, V.; Young, T., Mechanical formation of micro-and nano-plastic materials for environmental studies in agricultural ecosystems. *Science of the Total Environment* **2019,** *685*, 1097-1106.
19. Urban, V.; Langan, P., Diffraction structural biology - introductory overview. *Acta Crystallographica Section D-Structural Biology* **2018,** *74*, 713-714.
20. Sawada, D.; Kalluri, U. C.; O'Neill, H.; Urban, V.; Langan, P.; Davison, B.; Pingali, S. V., Tension wood structure and morphology conducive for better enzymatic digestion. *Biotechnology for Biofuels* **2018,** *11*, 9.
21. Oliver, R. C.; Naing, S.-H.; Weiss, K. L.; Pingali, S. V.; Lieberman, R. L.; Urban, V. S., Contrast-Matching Detergent in Small-Angle Neutron Scattering Experiments for Membrane Protein Structural Analysis and Ab Initio Modeling. *Journal of Visualized Experiments* **2018,** (140), e57901.
22. Naing, S.-H.; Oliver, R. C.; Weiss, K. L.; Urban, V. S.; Lieberman, R. L., Solution Structure of an Intramembrane Aspartyl Protease via Small Angle Neutron Scattering. *Biophysical Journal* **2018,** *114* (3), 602-608.
23. Naing, S.-H.; Kalyoncu, S.; Smalley, D. M.; Kim, H.; Tao, X.; George, J. B.; Jonke, A. P.; Oliver, R. C.; Urban, V. S.; Torres, M. P.; Lieberman, R. L., Both positional and chemical variables control in vitro proteolytic cleavage of a presenilin ortholog. *Journal of Biological Chemistry* **2018**.
24. Heller, W. T.; Cuneo, M.; Debeer-Schmitt, L.; Do, C.; He, L.; Heroux, L.; Littrell, K.; Pingali, S. V.; Qian, S.; Stanley, C.; Urban, V. S.; Wu, B.; Bras, W., The suite of small-angle neutron scattering instruments at Oak Ridge National LaboratoryThis article will form part of a virtual special issue on advanced neutron scattering instrumentation, marking the 50th anniversary of the journal. *Journal of Applied Crystallography* **2018,** *51* (2).
25. Hayes, D. G.; Ye, R.; Dunlap, R. N.; Anunciado, D. B.; Pingali, S. V.; O'Neill, H. M.; Urban, V. S., Bicontinuous microemulsions as a biomembrane mimetic system for melittin. *Biochimica et Biophysica Acta (BBA) - Biomembranes* **2018,** *1860* (2), 624-632.
26. Hayes, D. G.; Pingali, S. V.; O'Neill, H. M.; Urban, V. S.; Ye, R., Observation of a structural gradient in Winsor-III microemulsion systems. *Soft Matter* **2018,** *14* (25), 5270-5276.
27. Fares, H. M.; Ghoussoub, Y. E.; Delgado, J. D.; Fu, J. C.; Urban, V. S.; Schlenoff, J. B., Scattering Neutrons along the Polyelectrolyte Complex/Coacervate Continuum. *Macromolecules* **2018,** *51* (13), 4945-4955.
28. Alford, A.; Kozlovskaya, V.; Xue, B.; Gupta, N.; Higgins, W.; Pham-Hua, D.; He, L.; Urban, V. S.; Tse, H. M.; Kharlampieva, E., Manganoporphyrin-Polyphenol Multilayer Capsules as Radical and Reactive Oxygen Species (ROS) Scavengers. *Chemistry of Materials* **2018,** *30* (2), 344-357.
29. Sharma, V. K.; Hayes, D. G.; Urban, V. S.; O'Neill, H. M.; Tyagi, M.; Mamontov, E., Nanoscopic dynamics of bicontinous microemulsions: effect of membrane associated protein. *Soft Matter* **2017,** *13* (28), 4871-4880.
30. Richter, A. G.; Dergunov, S. A.; Kim, M. D.; Shmakov, S. N.; Pingali, S. V.; Urban, V. S.; Liu, Y.; Pinkhassik, E., Unraveling the Single-Nanometer Thickness of Shells of Vesicle-Templated Polymer Nanocapsules. *Journal of Physical Chemistry Letters* **2017,** *8* (15), 3630-3636.
31. Pingali, S. V.; Urban, V. S.; Heller, W. T.; McGaughey, J.; O'Neill, H.; Foston, M. B.; Li, H.; Wyman, C. E.; Myles, D. A.; Langan, P.; Ragauskas, A.; Davison, B.; Evans, B. R., Understanding Multiscale Structural Changes During Dilute Acid Pretreatment of Switchgrass and Poplar. *Acs Sustainable Chemistry & Engineering* **2017,** *5* (1), 426-435.
32. Oliver, R. C.; Pingali, S. V.; Urban, V. S., Designing Mixed Detergent Micelles for Uniform Neutron Contrast. *The Journal of Physical Chemistry Letters* **2017,** *8* (20), 5041-5046.
33. O'Neill, H.; Pingali, S. V.; Petridis, L.; He, J.; Mamontov, E.; Hong, L.; Urban, V.; Evans, B.; Langan, P.; Smith, J. C.; Davison, B. H., Dynamics of water bound to crystalline cellulose. *Scientific Reports* **2017,** *7* (1), 11840.

34. Hayes, D. G.; Ye, R.; Dunlap, R. N.; Cuneo, M. J.; Pingali, S. V.; O'Neill, H. M.; Urban, V. S., Protein extraction into the bicontinuous microemulsion phase of a Water/SDS/pentanol/dodecane winsor-III system: Effect on nanostructure and protein conformation. *Colloids and Surfaces B: Biointerfaces* **2017,** *160* (Supplement C), 144-153.
35. Chaudhuri, B.; Muñoz, I. G.; Qian, S.; Urban, V. S., *Biological Small Angle Scattering: Techniques, Strategies and Tips*. Springer Nature: 2017.
36. Anunciado, D. B.; Nyugen, V. P.; Hurst, G. B.; Doktycz, M. J.; Urban, V.; Langan, P.; Mamontov, E.; O'Neill, H., In Vivo Protein Dynamics on the Nanometer Length Scale and Nanosecond Time Scale. *Journal of Physical Chemistry Letters* **2017,** *8* (8), 1899-1904.
37. Stingaciu, L. R.; O'Neill, H.; Liberton, M.; Urban, V. S.; Pakrasi, H. B.; Ohl, M., Revealing the Dynamics of Thylakoid Membranes in Living Cyanobacterial Cells. *Scientific Reports* **2016,** *6*, 6.
38. Sharma, V. K.; Mamontov, E.; Tyagi, M.; Urban, V. S., Effect of alpha-Tocopherol on the Microscopic Dynamics of Dimyristoylphosphatidylcholine Membrane. *J Phys Chem B* **2016,** *120* (1), 154-163.
39. Sharma, V. K.; Mamontov, E.; Tyagi, M.; Qian, S.; Rai, D. K.; Urban, V. S., Dynamical and Phase Behavior of a Phospholipid Membrane Altered by an Antimicrobial Peptide at Low Concentration. *Journal of Physical Chemistry Letters* **2016,** *7* (13), 2394-2401.
40. Rai, D. K.; Sharma, V. K.; Anunciado, D.; O'Neill, H.; Mamontov, E.; Urban, V.; Heller, W. T.; Qian, S., Neutron Scattering Studies of the Interplay of Amyloid beta Peptide(1-40) and An Anionic Lipid 1,2-dimyristoyl-sn-glycero-3-phosphoglycerol. *Scientific Reports* **2016,** *6*, 11.
41. Qian, S.; Pingali, S. V.; Weiss, K. L.; Urban, V.; O'Neill, H. M.; Langan, P. In *Neutron scattering for biological research: Progress at the bio-SANS Beam line*, Advanced Materials - TechConnect Briefs 2016, 2016; pp 16-19.
42. Sharma, V. K.; Mamontov, E.; Anunciado, D. B.; O'Neill, H.; Urban, V., Nanoscopic Dynamics of Phospholipid in Unilamellar Vesicles: Effect of Gel to Fluid Phase Transition. *The Journal of Physical Chemistry B* **2015,** *119* (12), 4460-4470.
43. Sharma, V. K.; Mamontov, E.; Anunciado, D. B.; O'Neill, H.; Urban, V. S., Effect of antimicrobial peptide on the dynamics of phosphocholine membrane: role of cholesterol and physical state of bilayer. *Soft Matter* **2015,** *11* (34), 6755-6767.
44. O'Neill, H.; Shah, R.; Evans, B. R.; He, J. H.; Pingali, S. V.; Chundawat, S. P. S.; Jones, A. D.; Langan, P.; Davison, B. H.; Urban, V., Production of Bacterial Cellulose with Controlled Deuterium-Hydrogen Substitution for Neutron Scattering Studies. In *Isotope Labeling of Biomolecules - Labeling Methods*, Kelman, Z., Ed. Elsevier Academic Press Inc: San Diego, 2015; Vol. 565, pp 123-146.
45. Jiang, J.; Zhang, H.; Lu, X.; Lu, Y.; Cuneo, M. J.; O'Neill, H. M.; Urban, V.; Lo, C. S.; Blankenship, R. E., Oligomerization state and pigment binding strength of the peridinin-Chl a-protein. *Febs Lett* **2015,** *589* (19), 2713-2719.
46. Hayes, D. G.; Gomez del Rio, J. A.; Ye, R.; Urban, V. S.; Pingali, S. V.; O'Neill, H. M., Effect of Protein Incorporation on the Nanostructure of the Bicontinuous Microemulsion Phase of Winsor-III Systems: A Small-Angle Neutron Scattering Study. *Langmuir* **2015,** *31* (6), 1901-1910.
47. Feygenson, M.; Bauer, J. C.; Gai, Z.; Marques, C.; Aronson, M. C.; Teng, X. W.; Su, D.; Stanic, V.; Urban, V. S.; Beyer, K. A.; Dai, S., Exchange bias effect in Au-Fe3O4 dumbbell nanoparticles induced by the charge transfer from gold. *Phys Rev B* **2015,** *92* (5).
48. Anunciado, D.; Rai, D. K.; Qian, S.; Urban, V.; O'Neill, H., Small-angle neutron scattering reveals the assembly of alpha-synuclein in lipid membranes. *Biochimica Et Biophysica Acta-Proteins and Proteomics* **2015,** *1854* (12), 1881-1889.
49. Adams, P. G.; Collins, A. M.; Sahin, T.; Subramanian, V.; Urban, V. S.; Vairaprakash, P.; Tian, Y.; Evans, D. G.; Shreve, A. P.; Montaño, G. A., Diblock Copolymer Micelles and Supported Films with Noncovalently Incorporated Chromophores: A Modular Platform for Efficient Energy Transfer. *Nano Letters* **2015**.

50. Wang, Y.; Freund, D. M.; Magdaong, N. M.; Urban, V. S.; Frank, H. A.; Hegeman, A. D.; Tang, J. K.-H., Impact of esterified bacteriochlorophylls on the biogenesis of chlorosomes in Chloroflexus aurantiacus. *Photosynthesis research* **2014**, 1-18.
51. Wang, H.; Gurau, G.; Pingali, S. V.; O'Neill, H. M.; Evans, B. R.; Urban, V. S.; Heller, W. T.; Rogers, R. D., Physical Insight into Switchgrass Dissolution in Ionic Liquid 1-Ethyl-3-methylimidazolium Acetate. *Acs Sustainable Chemistry & Engineering* **2014,** *2* (5), 1264-1269.
52. Pingali, S. V.; O'Neill, H. M.; Nishiyama, Y.; He, L. L.; Melnichenko, Y. B.; Urban, V.; Petridis, L.; Davison, B.; Langan, P., Morphological changes in the cellulose and lignin components of biomass occur at different stages during steam pretreatment. *Cellulose* **2014,** *21* (2), 873-878.
53. Ortony, J. H.; Choi, S.-H.; Spruell, J. M.; Hunt, J. N.; Lynd, N. A.; Krogstad, D. V.; Urban, V. S.; Hawker, C. J.; Kramer, E. J.; Han, S., Fluidity and water in nanoscale domains define coacervate hydrogels. *Chemical Science* **2014,** *5* (1), 58-67.
54. Langan, P.; Petridis, L.; O'Neill, H. M.; Pingali, S. V.; Foston, M.; Nishiyama, Y.; Schulz, R.; Lindner, B.; Hanson, B. L.; Harton, S.; Heller, W. T.; Urban, V.; Evans, B. R.; Gnanakaran, S.; Ragauskas, A. J.; Smith, J. C.; Davison, B. H., Common processes drive the thermochemical pretreatment of lignocellulosic biomass. *Green Chemistry* **2014,** *16* (1), 63-68.
55. Kim, M. D.; Dergunov, S. A.; Richter, A. G.; Durbin, J.; Shmakov, S. N.; Jia, Y.; Kenbeilova, S.; Orazbekuly, Y.; Kengpeiil, A.; Lindner, E.; Pingali, S. V.; Urban, V. S.; Weigand, S.; Pinkhassik, E., Facile Directed Assembly of Hollow Polymer Nanocapsules within Spontaneously Formed Catanionic Surfactant Vesicles. *Langmuir* **2014,** *30* (24), 7061-7069.
56. Holley, D. W.; Ruppel, M.; Mays, J. W.; Urban, V. S.; Baskaran, D., Polystyrene nanoparticles with tunable interfaces and softness. *Polymer* **2014,** *55* (1), 58-65.
57. Heller, W. T.; Urban, V. S.; Lynn, G. W.; Weiss, K. L.; O'Neill, H. M.; Pingali, S. V.; Qian, S.; Littrell, K. C.; Melnichenko, Y. B.; Buchanan, M. V.; Selby, D. L.; Wignall, G. D.; Butler, P. D.; Myles, D. A., The Bio-SANS instrument at the High Flux Isotope Reactor of Oak Ridge National Laboratory. *Applied Crystallography* **2014,** *47* (4).
58. He, J. H.; Pingali, S. V.; Chundawat, S. P. S.; Pack, A.; Jones, A. D.; Langan, P.; Davison, B. H.; Urban, V.; Evans, B.; O'Neill, H., Controlled incorporation of deuterium into bacterial cellulose. *Cellulose* **2014,** *21* (2), 927-936.
59. Tang, J. K. H.; Saikin, S. K.; Pingali, S. V.; Enriquez, M. M.; Huh, J.; Frank, H. A.; Urban, V. S.; Aspuru-Guzik, A., Temperature and Carbon Assimilation Regulate the Chlorosome Biogenesis in Green Sulfur Bacteria. *Biophysical Journal* **2013,** *105* (6), 1346-1356.
60. Schoberth, H. G.; Pester, C. W.; Ruppe, M.; Urban, V. S.; Boker, A., Orientation-Dependent Order-Disorder Transition of Block Copolymer Lamellae in Electric Fields. *Acs Macro Letters* **2013,** *2* (6), 469-473.
61. Ruppel, M.; Pester, C. W.; Langner, K. M.; Sevink, G. J. A.; Schoberth, H. G.; Schmidt, K.; Urban, V. S.; Mays, J. W.; Boker, A., Electric Field Induced Selective Disordering in Lamellar Block Copolymers. *Acs Nano* **2013,** *7* (5), 3854-3867.
62. Liedel, C.; Schindler, K. A.; Pavan, M. J.; Lewin, C.; Pester, C. W.; Ruppel, M.; Urban, V. S.; Shenhar, R.; Böker, A., Electric-Field-Induced Alignment of Block Copolymer/Nanoparticle Blends. *Small* **2013,** *9* (19), 3276-3281.
63. Liedel, C.; Pester, C. W.; Ruppel, M.; Lewin, C.; Pavan, M. J.; Urban, V. S.; Shenhar, R.; Bosecke, P.; Boker, A., Block Copolymer Nanocomposites in Electric Fields: Kinetics of Alignment. *Acs Macro Letters* **2013,** *2* (1), 53-58.
64. Liberton, M.; Page, L. E.; O'Dell, W. B.; O'Neill, H.; Mamontov, E.; Urban, V. S.; Pakrasi, H. B., Organization and flexibility of cyanobacterial thylakoid membranes examined by neutron scattering. *The Journal of biological chemistry* **2013,** *288* (5), 3632-40.

65. Liberton, M.; Collins, A. M.; Page, L. E.; O'Dell, W. B.; O'Neill, H.; Urban, V. S.; Timlin, J. A.; Pakrasi, H. B., Probing the consequences of antenna modification in cyanobacteria. *Photosynthesis research* **2013,** *118* (1-2), 17-24.
66. Hayes, D. G.; Alkhatib, M. H.; del Rio, J. G.; Urban, V. S., Physicochemical characterization of water-in-oil microemulsions formed by a binary 1,3-dioxolane alkyl ethoxylate/Aerosol-OT surfactant system. *Colloids and Surfaces a-Physicochemical and Engineering Aspects* **2013,** *417*, 99-110.
67. Hames, M. C.; McFeeters, H.; Holloway, W. B.; Stanley, C. B.; Urban, V. S.; McFeeters, R. L., Small Molecule Binding, Docking, and Characterization of the Interaction between Pth1 and Peptidyl-tRNA. *International Journal of Molecular Sciences* **2013,** *14* (11), 22741-22752.
68. Dergunov, S. A.; Richter, A. G.; Kim, M. D.; Pingali, S. V.; Urban, V. S.; Pinkhassik, E., Synergistic self-assembly of scaffolds and building blocks for directed synthesis of organic nanomaterials. *Chemical Communications* **2013,** *49* (94), 11026-11028.
69. Wignall, G. D.; Littrell, K. C.; Heller, W. T.; Melnichenko, Y. B.; Bailey, K. M.; Lynn, G. W.; Myles, D. A.; Urban, V. S.; Buchanan, M. V.; Selby, D. L.; Butler, P. D., The 40 m general purpose small-angle neutron scattering instrument at Oak Ridge National Laboratory. *Journal of Applied Crystallography* **2012,** *45*, 990-998.
70. Urban, V., Small Angle Neutron Scattering. In *Characterization of Materials*, Kaufmann, E. N., Ed. John Wiley and Sons: 2012.
71. Qian, S.; Dean, R.; Urban, V. S.; Chaudhuri, B. N., The Internal Organization of Mycobacterial Partition Assembly: Does the DNA Wrap a Protein Core? *PLoS One* **2012,** *7* (12), 7.
72. O'Neill, H.; Chathoth, S. M.; Cardoso, M. B.; Baker, G. A.; Mamontov, E.; Urban, V. S., Characterization of Morphology and Active Agent Mobility within Hybrid Silica Sol-Gel Composites. *Journal of Physical Chemistry C* **2012,** *116* (26), 13972-13979.
73. O'Dell, W. B.; Beatty, K. J.; Tang, J. K. H.; Blankenship, R. E.; Urban, V. S.; O'Neill, H., Sol-gel entrapped light harvesting antennas: immobilization and stabilization of chlorosomes for energy harvesting. *Journal of Materials Chemistry* **2012,** *22* (42), 22582-22591.
74. Markarian, M. Z.; Hariri, H. H.; Reisch, A.; Urban, V. S.; Schlenoff, J. B., A Small-Angle Neutron Scattering Study of the Equilibrium Conformation of Polyelectrolytes in Stoichiometric Saloplastic Polyelectrolyte Complexes. *Macromolecules* **2012,** *45* (2), 1016-1024.
75. Liedel, C.; Pester, C. W.; Ruppel, M.; Urban, V. S.; Boker, A., Beyond Orientation: The Impact of Electric Fields on Block Copolymers. *Macromolecular Chemistry and Physics* **2012,** *213* (3), 259-269.
76. Langan, P.; Evans, B. R.; Foston, M.; Heller, W. T.; O'Neill, H.; Petridis, L.; Pingali, S. V.; Ragauskas, A. J.; Smith, J. C.; Urban, V. S.; Davison, B. H., Neutron technologies for bioenergy research. *Industrial Biotechnology* **2012,** *8* (4), 209-216.
77. Harton, S. E.; Pingali, S. V.; Nunnery, G. A.; Baker, D. A.; Walker, S. H.; Muddiman, D. C.; Koga, T.; Rials, T. G.; Urban, V. S.; Langan, P., Evidence for Complex Molecular Architectures for Solvent-Extracted Lignins. *Acs Macro Letters* **2012,** *1* (5), 568-573.
78. de Kruif, C. G.; Huppertz, T.; Urban, V. S.; Petukhov, A. V., Casein micelles and their internal structure. *Advances in Colloid and Interface Science* **2012,** *171*, 36-52.
79. Berry, K. D.; Bailey, K. M.; Beal, J.; Diawara, Y.; Funk, L.; Hicks, J. S.; Jones, A. B.; Littrell, K. C.; Pingali, S. V.; Summers, P. R.; Urban, V. S.; Vandergriff, D. H.; Johnson, N. H.; Bradley, B. J., Characterization of the neutron detector upgrade to the GP-SANS and Bio-SANS instruments at HFIR. *Nuclear Instruments & Methods in Physics Research Section a-Accelerators Spectrometers Detectors and Associated Equipment* **2012,** *693*, 179-185.
80. Wang, J.; Lu, H.; Kamat, R.; Pingali, S. V.; Urban, V. S.; Cheng, J. J.; Lin, Y., Supramolecular Polymerization from Polypeptide-Grafted Comb Polymers. *Journal of the American Chemical Society* **2011,** *133* (33), 12906-12909.

81. Tekobo, S.; Richter, A. G.; Dergunov, S. A.; Pingali, S. V.; Urban, V.; Yan, B.; Pinkhassik, E., Synthesis, characterization, and controlled aggregation of biotemplated polystyrene nanodisks. *Journal of Nanoparticle Research* **2011,** *13* (12), 6427-6437.
82. Tang, K. H. T. K. H.; Zhu, L. Y.; Urban, V. S.; Collins, A. M.; Biswas, P.; Blankenship, R. E., Temperature and Ionic Strength Effects on the Chlorosome Light-Harvesting Antenna Complex. *Langmuir* **2011,** *27* (8), 4816-4828.
83. Richter, A. G.; Dergunov, S. A.; Ganus, B.; Thomas, Z.; Pingali, S. V.; Urban, V.; Liu, Y.; Porcar, L.; Pinkhassik, E., Scattering Studies of Hydrophobic Monomers in Liposomal Bilayers: An Expanding Shell Model of Monomer Distribution. *Langmuir* **2011,** *27* (7), 3792-3797.
84. Pingali, S. V.; O'Neill, H. M.; McGaughey, J.; Urban, V. S.; Rempe, C. S.; Petridis, L.; Smith, J. C.; Evans, B. R.; Heller, W. T., Small Angle Neutron Scattering Reveals pH-dependent Conformational Changes in Trichoderma reesei Cellobiohydrolase I Implications for Enzymatic Activity. *Journal of Biological Chemistry* **2011,** *286* (37), 32801-32809.
85. Petridis, L.; Pingali, S. V.; Urban, V.; Heller, W. T.; O'Neil, H. M.; Foston, M.; Ragauskas, A.; Smith, J. C., Self-similar multiscale structure of lignin revealed by neutron scattering and molecular dynamics simulation. *Physical Review E* **2011,** *83* (6).
86. Pester, C.; Ruppel, M.; Schoberth, H. G.; Schmidt, K.; Liedel, C.; van Rijn, P.; Schindler, K. A.; Hiltl, S.; Czubak, T.; Mays, J.; Urban, V. S.; Böker, A., Piezoelectric Properties of Non-Polar Block Copolymers. *Advanced Materials* **2011,** *23* (35), 4047-4052.
87. Foston, M.; Ragauskas, A.; Pingali, S. V.; Urban, V. S.; O'Neill, H.; Evans, B. R. In *Nuclear magnetic resonance and small-angle neutron analysis of native and deuterium enriched biomass for the detailed analysis of lignocellulosic breakdown*, 11AIChE - 2011 AIChE Annual Meeting, Conference Proceedings, 2011.
88. Chaudhuri, B. N.; Gupta, S.; Urban, V. S.; Chance, M. R.; D'Mello, R.; Smith, L.; Lyons, K.; Gee, J., A Combined Global and Local Approach to Elucidate Spatial Organization of the Mycobacterial ParB-parS Partition Assembly. *Biochemistry* **2011,** *50* (11), 1799-1807.
89. Tang, K. H.; Urban, V. S.; Wen, J.; Xin, Y.; Blankenship, R. E., SANS investigation of the photosynthetic machinery of Chloroflexus aurantiacus. *Biophys J* **2010,** *99* (8), 2398-407.
90. Pingali, S. V.; Urban, V. S.; Heller, W. T.; McGaughey, J.; O'Neill, H. M.; Foston, M.; Myles, D. A.; Ragauskas, A. J.; Evans, B. R., SANS study of cellulose extracted from switchgrass. *Acta Crystallogr D Biol Crystallogr* **2010,** *66* (Pt 11), 1189-93.
91. Pingali, S. V.; Urban, V. S.; Heller, W. T.; McGaughey, J.; O'Neill, H.; Foston, M.; Myles, D. A.; Ragauskas, A.; Evans, B. R., Breakdown of Cell Wall Nanostructure in Dilute Acid Pretreated Biomass. *Biomacromolecules* **2010,** *11* (9), 2329-2335.
92. Gomez del Rio, J.; Hayes, D. G.; Urban, V. S., Partitioning behavior of an acid-cleavable, 1,3-dioxolane alkyl ethoxylate, surfactant in single and binary surfactant mixtures for 2- and 3-phase microemulsion systems according to ethoxylate head group size. *J Colloid Interface Sci* **2010,** *352* (2), 424-35.
93. Cardoso, M. B.; Luckarift, H. R.; Urban, V. S.; O'Neill, H.; Johnson, G. R., Protein Localization in Silica Nanospheres Derived via Biomimetic Mineralization. *Advanced Functional Materials* **2010,** *20* (18), 3031-3038.
94. Luo, G. M.; Zhang, Q.; Del Castillo, A. R.; Urban, V.; O'Neill, H., Characterization of Sol-Gel-Encapsulated Proteins Using Small-Angle Neutron Scattering. *Acs Applied Materials & Interfaces* **2009,** *1* (10), 2262-2268.
95. Alkhatib, M. H.; Hayes, D. G.; Urban, V. S., Characterization of Microemulsion Systems Formed by a Mixed 1,3-Dioxolane Ethoxylate/Octyl Glucoside Surfactant System. *Journal of Surfactants and Detergents* **2009,** *12* (3), 277-283.

96. William T. Heller, G. W. L., Volker S. Urban, Kevin Weiss, Dean A.A. Myles The Bio-SANS Small-Angle Neutron Scattering Instrument at Oak Ridge National Laboratory. *Neutron News* **2008,** *19* (2), 22 - 23.
97. Teixeira, S. C. M.; Zaccai, G.; Ankner, J.; Bellissent-Funel, M. C.; Bewley, R.; Blakeley, M. P.; Callow, P.; Coates, L.; Dahint, R.; Dalgliesh, R.; Dencher, N. A.; Forsyth, V. T.; Fragneto, G.; Frick, B.; Gilles, R.; Gutberlet, T.; Haertlein, M.; Hauss, T.; Haussler, W.; Heller, W. T.; Herwig, K.; Holderer, O.; Juranyi, F.; Kampmann, R.; Knott, R.; Krueger, S.; Langan, P.; Lechner, R. E.; Lynn, G.; Majkrzak, C.; May, R. P.; Meilleur, F.; Mo, Y.; Mortensen, K.; Myles, D. A. A.; Natali, F.; Neylon, C.; Niimura, N.; Ollivier, J.; Ostermann, A.; Peters, J.; Pieper, J.; Ruhm, A.; Schwahn, D.; Shibata, K.; Soper, A. K.; Strassle, T.; Suzuki, J.; Tanaka, I.; Tehei, M.; Timmins, P.; Torikai, N.; Unruh, T.; Urban, V.; Vavrin, R.; Weiss, K., New sources and instrumentation for neutrons in biology. *Chemical Physics* **2008,** *345* (2-3), 133-151.
98. Schmidt, K.; Schoberth, H. G.; Ruppel, M.; Zettl, H.; Hansel, H.; Weiss, T. M.; Urban, V.; Krausch, G.; Boker, A., Reversible tuning of a block-copolymer nanostructure via electric fields. *Nature Materials* **2008,** *7* (2), 142-145.
99. O'Neill, H.; Heller, W. T.; Helton, K. E.; Urban, V. S.; Greenbaum, E., Small-angle X-ray scattering study of photosystem I - Detergent complexes: Implications for membrane protein crystallization. *J Phys Chem B* **2007,** *111* (16), 4211-4219.
100. Chojnowski, G.; Przeniosło, R.; Sosnowska, I.; Bukowski, M.; Natter, H.; Hempelmann, R.; Fitch, A.; Urban, V., Microstructure Evolution and Grain Growth Kinetics in Annealed Nanocrystalline Chromium. *The Journal of Physical Chemistry C* **2007,** *111* (15), 5599-5604.
101. Parrot, I. M.; Laux, V.; Urban, V.; Haertlein, M.; Forsyth, V. T., X-rays and neutrons for the study of DNA structure, hydration, and transitions. *Physica B-Condensed Matter* **2006,** *385-86*, 848-852.
102. Lynn, G. W.; Heller, W.; Urban, V.; Wignall, G. D.; Weiss, K.; Myles, D. A. A., Bio-SANS - A dedicated facility for neutron structural biology at oak ridge national laboratory. *Physica B-Condensed Matter* **2006,** *385-86*, 880-882.
103. Botti, A.; Pyckhout-Hintzen, W.; Richter, D.; Urban, V.; Straube, E., A microscopic look at the reinforcement of silica-filled rubbers. *Journal of Chemical Physics* **2006,** *124* (17).
104. Boker, A.; Schmidt, K.; Knoll, A.; Zettl, H.; Hansel, H.; Urban, V.; Abetz, V.; Krausch, G., The influence of incompatibility and dielectric contrast on the electric field-induced orientation of lamellar block copolymers. *Polymer* **2006,** *47* (3), 849-857.
105. Versmold, H.; Musa, S.; Kubetzki, H.; Urban, V., Stacking structure of concentrated shear ordered dispersions by two scattering methods. *Langmuir* **2005,** *21* (10), 4324-4327.
106. Versmold, H.; Kubetzki, H.; Musa, S.; Urban, V., Small-angle scattering without sample rotation. *Colloid and Polymer Science* **2005,** *283* (6), 612-618.
107. Parrot, I. M.; Urban, V.; Gardner, K. H.; Forsyth, V. T., Combined X-ray and neutron fibre diffraction studies of biological and synthetic polymers. *Nuclear Instruments & Methods in Physics Research Section B-Beam Interactions with Materials and Atoms* **2005,** *238* (1-4), 7-15.
108. Mahendrasingam, A.; Blundell, D. J.; Martin, C.; Urban, V.; Narayanan, T.; Fuller, W., Time resolved WAXS study of the role of mesophase in oriented crystallisation of poly(ethylene terephthalate-co-isophthalate) copolymers. *Polymer* **2005,** *46* (16), 6044-6049.
109. Rossle, M.; Panine, P.; Urban, V. S.; Riekel, C., Structural evolution of regenerated silk fibroin under shear: Combined wide- and small-angle x-ray scattering experiments using synchrotron radiation. *Biopolymers* **2004,** *74* (4), 316-327.
110. Rathgeber, S.; Pakula, T.; Urban, V., Structure of star-burst dendrimers: A comparison between small angle x-ray scattering and computer simulation results. *Journal of Chemical Physics* **2004,** *121* (8), 3840-3853.

111. Mahendrasingam, A.; Blundell, D. J.; Wright, A. K.; Urban, V.; Narayanan, T.; Fuller, W., Time resolved WAXS/SAXS observations of crystallisation in oriented melts of ultra high molecular weight polyethylene. *Polymer* **2004,** *45* (16), 5641-5652.
112. Urban, V.; Panine, P.; Ponchut, C.; Boesecke, P.; Narayanan, T., Two-dimensional camera for millisecond range time-resolved small-and wide-angle X-ray scattering. *Journal of Applied Crystallography* **2003,** *36*, 809-811.
113. Suortti, P.; Fernandez, M.; Urban, V., Comments on Synchrotron fibre diffraction identifies and locates foetal collagenous breast tissue associated with breast carcinoma by V.J. James (2002). J. Synchrotron Rad. 9, 71-76. *Journal of Synchrotron Radiation* **2003,** *10*, 198-198.
114. Panine, P.; Urban, V.; Boesecke, P.; Narayanan, T., Combined small- and wide-angle X-ray scattering study of early stages of polymer crystallization. *Journal of Applied Crystallography* **2003,** *36*, 991-994.
115. Mahendrasingam, A.; Blundell, D. J.; Wright, A. K.; Urban, V.; Narayanan, T.; Fuller, W., Observations of structure development during crystallisation of oriented poly(ethylene terephthalate). *Polymer* **2003,** *44* (19), 5915-5925.
116. Botti, A.; Pyckhout-Hintzen, W.; Richter, D.; Urban, V.; Straube, E.; Kohlbrecher, J., Silica filled elastomers: polymer chain and filler characterization in the undeformed state by a SANS-SAXS approach. *Polymer* **2003,** *44* (24), 7505-7512.
117. Boker, A.; Elbs, H.; Hansel, H.; Knoll, A.; Ludwigs, S.; Zettl, H.; Zvelindovsky, A. V.; Sevink, G. J. A.; Urban, V.; Abetz, V.; Muller, A. H. E.; Krausch, G., Electric field induced alignment of concentrated block copolymer solutions. *Macromolecules* **2003,** *36* (21), 8078-8087.
118. Belina, G.; Urban, V.; Straube, E.; Pyckhout-Hintzen, W.; Kluppel, M.; Heinrich, G., Microscopic deformation of filler particles in rubber under uniaxial deformation. *Macromolecular Symposia* **2003,** *200*, 121-128.
119. Zirkel, A.; Gruner, S. M.; Urban, V.; Thiyagarajan, P., Small-angle neutron scattering investigation of the Q-dependence of the Flory-Huggins interaction parameter in a binary polymer blend. *Macromolecules* **2002,** *35* (19), 7375-7386.
120. Urban, V.; Botti, A.; Pyckhout-Hintzen, W.; Richter, D.; Straube, E., Composites reinforcement by rods: a SAS study. In *Applied Physics a-Materials Science & Processing*, 2002; Vol. 74, pp S510-S512.
121. Rathgeber, S.; Monkenbusch, M.; Kreitschmann, M.; Urban, V.; Brulet, A., Dynamics of star-burst dendrimers in solution in relation to their structural properties. *Journal of Chemical Physics* **2002,** *117* (8), 4047-4062.
122. Fernandez, M.; Keyrilainen, J.; Serimaa, R.; Torkkeli, M.; Karjalainen-Lindsberg, M. L.; Tenhunen, M.; Thomlinson, W.; Urban, V.; Suortti, P., Small-angle x-ray scattering studies of human breast tissue samples. *Physics in Medicine and Biology* **2002,** *47* (4), 577-592.
123. Botti, A.; Pyckhout-Hintzen, W.; Urban, V.; Kohlbrecher, J.; Richter, D.; Straube, E., Silica-filled elastomers: polymer chain and filler characterization by a SANS-SAXS approach. *Applied Physics a-Materials Science & Processing* **2002,** *74*, S513-S515.
124. Böker, A.; Elbs, H.; Hänsel, H.; Knoll, A.; Ludwigs, S.; Zettl, H.; Urban, V.; Abetz, V.; Müller, A. H. E.; Krausch, G. In *Macroscopic alignment of concentrated block copolymer solutions in electric fields*, American Chemical Society, Polymer Preprints, Division of Polymer Chemistry, 2002; pp 350-351.
125. Boker, A.; Elbs, H.; Hansel, H.; Knoll, A.; Ludwigs, S.; Zettl, H.; Urban, V.; Abetz, V.; Muller, A. H. E.; Krausch, G., Microscopic mechanisms of electric-field-induced alignment of block copolymer microdomains. *Physical Review Letters* **2002,** *89* (13).

126. Versmold, H.; Musa, S.; Dux, C.; Lindner, P.; Urban, V., Shear-induced structure in concentrated dispersions: Small angle synchrotron X-ray and neutron scattering. *Langmuir* **2001,** *17* (22), 6812-6815.
127. Jensen, M. P.; Chiarizia, R.; Urban, V., Investigation of the aggregation of the neodymium complexes of dialkylphosphoric, -oxothiophosphinic, and -dithiophosphinic acids in toluene. *Solvent Extraction and Ion Exchange* **2001,** *19* (5), 865-884.
128. Wang, H. B.; Wang, H. H.; Urban, V. S.; Littrell, K. C.; Thiyagarajan, P.; Yu, L. P., Syntheses of amphiphilic diblock copolymers containing a conjugated block and their self-assembling properties. *Journal of the American Chemical Society* **2000,** *122* (29), 6855-6861.
129. Urban, V.; Wang, H. H.; Thiyagarajan, P.; Littrell, K. C.; Wang, H. B.; Yu, L., Self-organization of OPV-PEG diblock copolymers in THF/water. *Journal of Applied Crystallography* **2000,** *33* (1), 645-649.
130. Thiyagarajan, P.; Burkoth, T. S.; Urban, V.; Seifert, S.; Benzinger, T. L. S.; Morgan, D. M.; Gordon, D.; Meredith, S. C.; Lynn, D. G., pH dependent self assembly of beta-amyloid(10-35) and beta-amyloid(10-35)PEG3000. *Journal of Applied Crystallography* **2000,** *33* (1), 535-539.
131. Suib, S. L.; Tong, W.; Brock, S. L.; Nair, J.; Urban, V.; Thiyagarajan, P., Applications of x-ray and neutron methods to porous manganese oxide systems. *ACS Division of Fuel Chemistry, Preprints* **2000,** *45* (2), 314-315.
132. Littrell, K.; Urban, V.; Tiede, D.; Thiyagarajan, P., Solution structure of detergent micelles at conditions relevant to membrane protein crystallization. *Journal of Applied Crystallography* **2000,** *33* (1), 577-581.
133. Chiarizia, R.; Urban, V.; Thiyagarajan, P.; Bond, A. H.; Dietz, M. L., Small angle neutron scattering investigation of the species formed in the extraction of Sr(II) by mixtures of di-n-octylphosphoric acid and dicyclohexano-18-crown-6. *Solvent Extraction and Ion Exchange* **2000,** *18* (3), 451-478.
134. Burkoth, T. S.; Benzinger, T. L. S.; Urban, V.; Morgan, D. M.; Gregory, D. M.; Thiyagarajan, P.; Botto, R. E.; Meredith, S. C.; Lynn, D. G., Structure of the beta-amyloid((10-35)) fibril. *Journal of the American Chemical Society* **2000,** *122* (33), 7883-7889.
135. Botti, A.; Pyckhout-Hintzen, W.; Richter, D.; Straube, E.; Urban, V.; Kohlbrecher, J., Chain deformation in filled elastomers: a SANS approach. *Physica B* **2000,** *276*, 371-372.
136. Chiarizia, R.; Urban, V.; Thiyagarajan, P.; Herlinger, A. W., Aggregation of complexes formed in the extraction of selected metal cations by P,P'-di(2-ethylhexyl methanediphosphonic acid. *Solvent Extraction and Ion Exchange* **1999,** *17* (1), 113-132.
137. Chiarizia, R.; Urban, V.; Thiyagarajan, P.; Herlinger, A. W., SANS study of aggregation of the complexes formed by selected metal cations and P,P '-di(2-ethylhexyl) ethane- and butane-diphosphonic acids. *Solvent Extraction and Ion Exchange* **1999,** *17* (5), 1171-1194.
138. Burkoth, T. S.; Benzinger, T. L. S.; Urban, V.; Lynn, D. G.; Meredith, S. C.; Thiyagarajan, P., Self-assembly of A beta((10-35))-PEG block copolymer fibrils. *Journal of the American Chemical Society* **1999,** *121* (32), 7429-7430.
139. Brock, S. L.; Sanabria, M.; Suib, S. L.; Urban, V.; Thiyagarajan, P.; Potter, D. I., Particle size control and self-assembly processes in novel colloids of nanocrystalline manganese oxide. *J Phys Chem B* **1999,** *103* (35), 7416-7428.
140. Westermann, S.; Urban, V.; Pyckhout-Hintzen, W.; Richter, D.; Straube, E., Comment on '"Lozenge" contour plots in scattering from polymer networks'. *Physical Review Letters* **1998,** *80* (24), 5449-5449.
141. Chiarizia, R.; Urban, V.; Thiyagarajan, P.; Herlinger, A. W., Aggregation of P,P '-di(2-ethylhexyl) methanediphosphonic acid and its Fe(III) complexes. *Solvent Extraction and Ion Exchange* **1998,** *16* (5), 1257-1278.

142. Urban, V.; Chiarizia, R.; Herlinger, A. W.; Ku, C. Y.; Thiyagarajan, P., SANS study of dialkylsubstituted diphosphonic acids and their complexes with Ca, Fe, La, Th and U in toluene. *Physica B* **1997,** *241*, 355-357.
143. PyckhoutHintzen, W.; Westermann, S.; Urban, V.; Richter, D.; Straube, E., SANS investigations of topological constraints and microscopic deformation in polymer networks. *Physica B* **1997,** *234*, 236-239.
144. Westermann, S.; Urban, V.; PyckhoutHintzen, W.; Richter, D.; Straube, E., SANS investigations of topological constraints in networks made from triblock copolymers. *Macromolecules* **1996,** *29* (19), 6165-6174.
145. Urban, V. Mikroskopische Deformationen in Elastomeren. PhD Dissertation, University Munster, Germany, 1995.
146. Straube, E.; Urban, V.; Pyckhouthintzen, W.; Richter, D.; Glinka, C. J., Small-angle neutron-scattering investigation of topological constraints and tube deformation in networks. *Physical Review Letters* **1995,** *74* (22), 4464-4467.
147. Straube, E.; Urban, V.; Pyckhouthintzen, W.; Richter, D., SANS investigations of topological constraints and microscopic deformations in rubberelastic networks. *Macromolecules* **1994,** *27* (26), 7681-7688.
148. Zirkel, A.; Urban, V.; Richter, D.; Fetters, L. J.; Huang, J. S.; Kampmann, R.; Hadjichristidis, N., Small-angle neutron-scattering evaluation of the temperature-dependence of atactic polypropylene and poly(1-butene) chain dimensions in the melt. *Macromolecules* **1992,** *25* (23), 6148-6155.
149. Zirkel, A.; Urban, V.; Richter, D.; Fetters, L. J.; Huang, J. S. In *Small angle neutron scattering evaluation of the temperature dependence of atactic polypropylene and poly (1-butene) chain dimensions in the melt*, Polymeric Materials Science and Engineering, Proceedings of the ACS Division of Polymeric Materials Science and Engineering, 1992; p 215.
150. Urban, V. Temperaturabhaengigkeit der Struktur von ataktischem Polypropylen. Chemie-Diplom, University Munster, Germany, 1992.

Invited Talks:

- "Structural gradients in 3-phase microemulsions", International Small Angle Scattering Conference, Traverse City MI, October 2018.
- "Opportunities for Industrial R&D using neutrons at Oak Ridge National Laboratory (ORNL) at DuPont headquarters in Wilmington, Delaware, March 29, 2017.
- "Small Angle Neutron Scattering", 8th Workshop on Neutron Scattering Applications in Structural Biology, June 5-9, 2017, Oak Ridge, TN.
- "Opportunities for Polymer Research Using Neutrons at Oak Ridge National Laboratory", 254th ACS National Meeting & Exposition, August 20-24, 2017 Washington DC, Session POLY: Federally Funded Research.
- "Neutron Contrast Variation in Soft and Biological Materials" at the Stanford Synchrotron Radiation Lightsource, Dec. 7, 2016.
- "Complex Hierarchical Structures in Biology: Opportunities for SANS and USANS" presented at USAS 2014 Workshop, June 5-6, Oak Ridge.
- Lecture on "Applications of Small Angle Scattering" at the 16th National School on Neutron & X-ray Scattering, June 2014.
- "From plastics to the molecules of life," NScD staff research seminar, May 15, 2013.
- "Biology and Life Sciences Instruments," Neutrons and Nano Workshops and User Meetings, Oak Ridge National Laboratory, August 12-15, 2013.

- Lecture on “Small Angle Scattering” at the 15th National School on Neutron & X-ray Scattering, August 2013.
- “Neutron scattering for energy and the environment – light harvesting and biofuels,” presented at the JCNS Workshop 2012, “Trends and Perspectives in Neutron Scattering for Soft Matter and Biophysics”, 8-11 October 2012, Tutzing, Germany.
- “Protein localization in silica nanospheres derived via biomimetic mineralization,” International Small-Angle Scattering Conference, Sydney, Australia, 18-23 November 2012.
- “From Superconductivity to Polymers and Biomass to Ancient Artifacts - the Power of the Neutron Probe” at Clark University, MA, 2012
- “Piezoelectric Properties of Non-Polar Block Copolymers”, ACA 2012, Boston, session on *Functional Nanomaterials*.
- Lecture on “Small Angle Scattering” at the 14th National School on Neutron & X-ray Scattering, August 2012.
- “Protein Localization in Silica Nanospheres Derived via Biomimetic Mineralization”, 2011 Meeting of the American Crystallographic Association, New Orleans, LA, May - June, 2011.
- Lecture on “Small Angle Scattering” at the 13th National School on Neutron & X-ray Scattering, June 2010.
- “Small Angle Scattering of Neutrons and X-rays – Applications” at the Tennessee Technological University, Nov. 19, 2009.
- “Small-Angle Neutron Scattering of Dilute Acid Pretreated Switchgrass”, American Conference on Neutron Scattering, Ottawa, Canada, June 27, 2010.
- Lecture on “Small Angle Scattering” at the 12th National School on Neutron & X-ray Scattering, June 2010.
- Lecture and Practical for Neutron and X-ray school 2009.
- Presentation of CSMB and Bio-SANS at 2009 ACA meeting.
- Presentation of CSMB and Bio-SANS at the 2009 International Conference on Small Angle Scattering.
- Invited Plenary talk on *Neutron Scattering Analysis of Polymers* at the National Polymer Graduate Research Conference 2007, Knoxville.
- Invited Talk on *Local and Nanoscale Structure in Polymer Systems, Including Effects of Applied Fields* at the 2007 SNAP/NOMAD meeting, ORNL.
- "Response of Polymer Conformation to External Stimuli Studied by Small-Angle Scattering" at the 19th International Symposium on Polymer Analysis and Characterization (ISPAC 2006)
- “Direct Observation of Polymer Single Chain Deformation in Elastomers by SANS”, spring 167th Technical Meeting of the Rubber Division, ACS, San Antonio, TX, May 2005.
- “Time-resolved Small Angle Scattering Studies of Alignment of Block Copolymer Solutions Induced by Electric Fields”, 2004 Denver X-ray Conference.
- Lecture on “Small Angle (Neutron) Scattering and its application to polymers and proteins”, Small Angle Scattering Workshop at the 2004 Denver X-ray Conference.
- Introductory Seminar on Small Angle Scattering, Oak Ridge National Laboratory, 2003.
- “11th Annual Fibre Diffraction and Non-Crystalline Diffraction Workshop” at the University of Keele, UK, 19th - 21st June 2002.

- "Structural Changes in Stretched Rubber: Perspectives for Time-Resolved SAXS, WAXS and USAXS at the ESRF High Brilliance Beamline", Kautschuk-Herbst-Kolloquium 2000, Hannover, Germany, October 2000.
- "Self-Organization in Block Copolymer Solutions, Investigated by Small Angle Synchrotron X-ray and Neutron Scattering", European Synchrotron Radiation Facility, May 07, 1999.
- "Microscopic Deformation in Polymer Networks", Chemistry Division of Argonne National Laboratory, May 14, 1998.
- "Microscopic Deformation and Topological Constraints in Stretched Polymer Networks Studied by Small Angle Neutron Scattering", University of Cincinnati, August 1, 1997.

Scientific Program Awards:

- Renewal of the Center for Structural Molecular Biology (DOE-BER, PI: H. O'Neill), 2019.
- Award of new DOE-BER project "A Multimodal Small-Angle Neutron Scattering Instrument for Studies of Flexible and Dynamic Biological Assemblies" (PI: H. O'Neill), 2018.
- Renewal of the Photosynthetic Antenna Research Center EFRC for 4 additional years (PI: Robert Blankenship, Washington University in St. Louis), 2014.
- Shuo Qian, Changwoo Do, William T. Heller, Lee Robertson, Greg Smith, Volker Urban "High-Resolution Small/Wide Angle Neutron Scattering for Atomic-to-Mesoscale Structure in Complex Soft Materials and Biology (HiRes-SWANS)", 2015.
- Urban, Volker S.; O'Neill, Hugh Michael; Coates, Leighton "Protein Segmental Labeling for Contrast Variation in Small Angle Neutron Scattering Studies", ORNL Seed Money Funds, 2015.
- Heller, William T, Qian, Shuo, O'Neill, Hugh, Urban, Volker S "Developing Grazing Incident Small-Angle Neutron Scattering for Studying the Interplay between Amyloid-beta Peptide and Cholesterol in Lipid Bilayers", ORNL LDRD 2012-2015.
- Urban, Volker S, Hayes, Douglas G, O'Neill, Hugh, Pingali, Sai Venkatesh "Meso-scale Liquid Confinement Systems for Enhanced Bioseparations and Bioconversion Strategies", ORNL LDRD 2012-2015.
- Center for Structural Molecular Biology renewal in FY 2010. In FY 2011 we successfully defended the request for the Bio-SANS detector replacement, receiving $ 900k out of a requested $ 1M.
- New Energy Frontier Research Center: "Photosynthetic Antenna Research Center (PARC)", led by Prof. Robert Blankenship, WUSTL was funded. 2009
- New BER SFA on Biofuels, based on our FWP ERKP704, Dynamic Visualization of Lignocellulose Degradation by Integration of Neutron Scattering Imaging and Computer Simulation. 2009
- A new FWP was started in FY08: ERKP704, Dynamic Visualization of Lignocellulose Degradation by Integration of Neutron Scattering Imaging and Computer Simulation, Lead PI: B. Evans. I work 10% of my time on this FWP and have had great successes in hiring the new post doctoral fellow Sai Venkatesh Pingali, who is 100% funded by this project, and for whom I am responsible as supervisor.
- NSF grant funding for neutron beam time travel and materials on a project of DNA regulation led by R. Rose, NCSU.
- Seed Money Project on "Neutron Characterization of Sol–Gel Drug Delivery Systems", PI Hugh O'Neill, which will commence in FY 2009 and on which I will work 10% of my time.

- The new Seed Money Program S07-019, "Probing the Molecular Interface of Cellulose and Lignin in Biomass," led by B. Evans was funded for $130,000.
- A new FWP was funded: ERKP704, Dynamic Visualization of Lignocellulose Degradation by Integration of Neutron Scattering Imaging and Computer Simulation, Lead PI: B. Evans.

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