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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:**

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| 2020-now | 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:**
Vice President, Neutron Scattering Society of America
Fellow of the Neutron Scattering Society of America
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 40, Scopus; 44 Google Scholar):**
1. Hackett J.C., Krueger S., Urban V.S., Zarate-Perez F., Small angle scattering reveals the orientation of cytochrome. *Journal of Inorganic Biochemistry* **2024**, 257, 112579.
2. Thelen J.L., Leite W., Urban V.S., O'Neill H.M., Grishaev A.V., Curtis J.E., Krueger S., Castellanos M.M., Morphological Characterization of Self-Amplifying mRNA Lipid Nanoparticles. *ACS Nano* **2024**, 18, 2, 1464–1476.

3. Thomas G., Wu Y., Leite W., Pingali S.V., Weiss K., Grant A.J., Diggs M.W., Schmidt-Krey I., Gutishvili G., Gumbart J.C., Urban V.S., Lieberman R.L., SANS reveals lipid-dependent oligomerization of an intramembrane aspartyl protease from H. volcanii. *Biophysical Journal* **2024**, 123, 1846-1856.
4. Wildgruber C., Qian S., Chen S.H., Herwig K.W., Urban V.S., O'Neill H.M., A science-driven approach to optimize the design for a biological small-angle neutron scattering instrument. *Journal of Applied Crystallography* **2024**, 57, 818-830.
5. Astner, A.F.; Hayes, D.G.; O'Neill, H.; Evans, B.R.; Pingali, S.V.; Urban, V.S.; Schaeffer, S.M.; Young, T.M., Assessment of cryogenic pretreatment for simulating environmental weathering in the formation of surrogate micro-and nanoplastics from agricultural mulch film. *Science of The Total Environment* **2023**, 870, 161867.
6. Gurumoorthy, Viswanathan; Shrestha, Utsab R; Zhang, Qiu; Pingali, Sai Venkatesh; Boder, Eric T; Urban, Volker S; Smith, Jeremy C; Petridis, Loukas; O'Neill, Hugh, Disordered Domain Shifts the Conformational Ensemble of the Folded Regulatory Domain of the Multidomain Oncoprotein c-Src. *Biomacromolecules* **2023**, 24, 2, 714–723.
7. Oehler, M. A.; Hayes, D. G.; D'Souza, D. H.; Senanayake, M.; Gurumoorthy, V.; Pingali, S. V.; O'Neill, H. M.; Bras, W.; Urban, V. S., Assessment of antimicrobial activity of melittin encapsulated in bicontinuous microemulsions prepared using renewable oils. *J Surfact Deterg*. **2023**, https://doi.org/10.1002/jsde.12654.
8. Leite W.C., Wu Y., Pingali S.V., Lieberman R.L., and Urban V.S., Change in Morphology of Dimyristoylphosphatidylcholine/Bile Salt Derivative Bicelle Assemblies with Dodecylmaltoside in the Disk and Ribbon Phases. *J. Phys. Chem. Lett.* **2022**, 13, (42), 9834–9840. DOI:10.1021/acs.jpclett.2c02445.
9. Yang Z., Foston M., O'Neill H.M., Urban V.S., Ragauskas A., Evans B.R., Davison B., Pingali S.V., Structural Reorganization of Noncellulosic Polymers Observed In Situ during Dilute Acid Pretreatment by Small-Angle Neutron Scattering. *ACS Sustainable Chemistry & Engineering* **2022,** *10*, 1, 314–322.
10. Copp S.M., Hamblin R.L., Swingle K., Rai D.K., Urban V.S., Ivanov S.A., Montano G.A., Complex pH-Dependent Interactions between Weak Polyelectrolyte Block Copolymer Micelles and Molecular Fluorophores. *Langmuir* **2022,** *38*, 2038-2045.
11. Heller W.T., Hetrick J., Bilheux J., Calvo J.B., Chen W.R., Debeer-Schmitt L.M., Do C., Doucet M., Fitzsimmons M.R., Godoy W.F., Granroth G.E., Hahn S.E., He L., Islam F.F., Lin J.Y., Littrell K.C., McDonnell M.T., McGaha J., Peterson P.F., Pingali S.V., drtsans: The data reduction toolkit for small-angle neutron scattering at Oak Ridge National Laboratory. *SoftwareX* **2022,** *19*, 101101.
12. Astner, A.; Hayes, D. G.; O'Neill, H. M.; Evans, B. R.; Pingali, S. V.; Urban, V. S.; Young, T. M., Forming Micro-and Nano-Plastics from Agricultural Plastic Films for Employment in Fundamental Research Studies. *JoVE* **2022,** *185*, e64112.
13. 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.
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15. 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.
16. 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.
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30. 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.
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33. 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.
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Structural Changes During Dilute Acid Pretreatment of Switchgrass and Poplar. *Acs Sustainable Chemistry & Engineering* **2017,** *5* (1), 426-435.
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**Invited Talks:**

- "Lipid Self-Organization in the Context of Membrane Protein Research and Drug Delivery", SAS2024, XIX International Small-Angle Scattering Conference, Taipei, Taiwan, November 2024.
- "Adding Neutron Scattering to the Experimental Scientist's Toolbox?", Colloquium at Northern Arizona University, Flagstaff AZ (virtual), April 2022.
- "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", 254$^{th}$ 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.
- "11$^{th}$ 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.

**Graduate and Postdoctoral Advisors and Advisees:**
Ph.D. Advisor: D. Richter, Universität Münster and FZ-Jülich, Germany;
Postdoctoral Advisors: W. Gruenwald, Robert Bosch GmbH, Germany; P. Thiyagarajan, Argonne National Laboratory, now at DOE-BES
Ph.D. Advisees: Gabor Belina, European Synchrotron Radiation Facility; Markus Ruppel, ORNL
Postdoctoral Advisees: Guangming Luo, ORNL; Sai Venkatesh Pingali, ORNL; Shuo Qian, ORNL; Durgesh Rai, ORNL; Ryan Oliver, ORNL; Wellington Leite, ORNL

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