

CURRICULUM VITAE

Naresh C. Osti

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Objective To work in a challenging research-oriented environment in which I can use knowledge of my subject matter, classroom experience, and organization skills to benefit the field of Chemistry and Chemical Engineering.

Professional Interests A research oriented position that utilizes my wide research experience of chemistry, physics of polymers and scattering techniques to design and understand novel materials.

Education **Doctor of Philosophy** (Chemistry)
Clemson University, Clemson, SC, USA (2014)

Master of Science (Physical Chemistry)
Tribhuvan University, Kathmandu, Nepal (1999)

Bachelor of Science (Chemistry and Biology)
Tribhuvan University, Kathmandu, Nepal (1997)

Honors and Awards Best teaching assistant award 2013, Chemistry Department,
Clemson University, Clemson, SC

Research Experience 2015-present, **Postdoctoral Research Associate**
Chemical and Engineering Materials Division,
Oak Ridge National laboratory, Oak Ridge, TN

- Studied the dynamics of water in 2-D transitional metal carbide, MXenes.
- Investigated the dynamics of room temperature ionic liquids confined in different forms of carbon (carbide derived carbon and carbon nano onions) to relate their dynamical properties to the electrical energy storage capabilities.
- Wrote many successful proposals to get neutron beam time on BASIS at ORNL, HFBS at NIST-NCNR and LET at ISIS instruments.

2007-2014, **Graduate Research Assistant**
Department of Chemistry, Clemson University

- Intensive experiences in neutron and x-ray scattering techniques, atomic force microscopy and fluorescence spectroscopy, data analysis, fitting routines (home build and commercial)
- Working in interdisciplinary area with synthetic chemist and theorist.
- Studied the dynamics of substituent in conjugated polymer using Quasi-elastic neutron scattering (QENS) technique.
- Investigated the dynamics of water within the semi-rigid sulfonated polyphenylene ionomers membranes using quasi elastic neutron scattering (QENS) technique.
- Studied the structure and self-assembly of charged conjugated polymer and gold nanoparticles hybrids in solutions and in solid substrate using AFM and SANS techniques.
- Investigated the structure and assembly of conjugated polymer polydots in water and in solid substrate using AFM, Fluorescence microscopy and SANS.
- Studied the effect of solvents on the structure of conjugated poly dots using SANS.
- Studied the structure of poly dots of different ionic conjugated polymers, poly(phenylene ethynylene), as a potential fluorescence emitting bio sensors using fluorescence spectroscopy, AFM, SANS and QENS

Teaching Experience

2007 - 2014, **Chemistry Graduate Teaching Assistant**
Chemistry Department, Clemson University, Clemson, SC

- Laboratory instructor for undergraduate general chemistry
- Assisted in developing and designing the undergraduate general laboratory syllables

2004 – 2007, **Chemistry Teacher**
Rice High School, New York, NY

- General chemistry and advance placement (AP) chemistry of high school students
- Designed and conducted the chemistry laboratory course for high school student

2002 - 2003, **Assistant Lecturer of Chemistry**

School of Health Science, Bharatpur, Nepal

- Instructor of undergraduate general chemistry courses
- Laboratory instructor for undergraduate general chemistry
- Assisted in developing and designing the undergraduate general chemistry syllables for health assistant student.

2001 - 2002, **Assistant Lecturer of Chemistry**

Amrit Science Campus, Kathmandu, Nepal

- Instructor of undergraduate general chemistry courses
- Laboratory instructor for undergraduate general chemistry

Publications

- **Naresh C. Osti**, Michael Naguib Abdelmalak, Eugene Mamontov, Yury Gogotsi, David J. Wesolowski, "*Study of Effects of Ions on the Dynamics of Water Confined between Two-Dimensional Layers of Titanium Carbide, MXenes, Using Quasi-elastic Neutron Scattering*, in preparation for JACS
- **Naresh C. Osti**, Thusitha N. Etampawala, Dilru R. Ratnaweera, Madhusudan Tyagi, Uwe H.-F. Bunz, Dvora Perahia, *Quasi-elastic neutron backscattering study of dynamics of substituent in conjugated polymer*, submitted
- **Naresh C. Osti**, Thusitha N. Etampawala, Umesh M. Shrestha, Madhusudan Tyagi, Souleymane O. Diallo, Eugene Mamontov, Chris J. Cornelius, Dvora Perahia, *Dynamics of Water in Sulfonated Poly(phenylene) Ionomer Membranes*, submitted
- **Naresh C. Osti**, Dilru R. Ratnaweera, Thusitha Etampawala, Umesh M. Shrestha, Dvora Perahia, *Structure and Assembly of Polymeric Dots Formed by Conjugated Polymers*, submitted
- **Naresh C. Osti**, Thusitha Etampawala, Umesh M. Shrestha, Sidath I. Wijesinghe, Boualem Hammouda, Dvora Perahia, *Structure and Conformation of Ionic Conjugated Polymers in Confined Geometry*, submitted
- Sabina Maskey, **Naresh C. Osti**, Gary S. Grest, and Dvora Perahia, "*Dynamics of Polydots, Soft Luminescent Polymeric Nanoparticles*" *Macromolecules*, **2016** (Submitted)
- Thusitha Etampawala, **Naresh C. Osti**, Dipak Aryal, Lilin He, William T. Heller, Carl L. Willis, Gary S. Grest, and Dvora Perahia, *Association of a Multifunctional Ionic Block Copolymer in a Selective Solvent*, *Soft Matter*, **2014** (Submitted) [Neutron, Computational]*
- **Osti N.C.**, Cote A., Mamontov E., Ramirez-Cuesta A.J., Wesolowski D.J., Diallo S.O., *Characteristic features of water dynamics in restricted*

geometries investigated with quasi-elastic neutron scattering, Chemical Physics, 465–466, 1-8 (2016)

- Ashley A. Buel, **Naresh C. Osti**, Yamin Htet, Catherine A. Conrad, Mina F. Shehata, Ruttayapon Potai, Andrew G. Tennyson, Dvora Perahia, and Rhett C. Smith, *Conjugated Polymers with m-Pyridine Linkages: Synthesis, Photophysics, Solution Structure and Film Morphology*, Journal of Materials Chemistry C, **2014** (submitted) [synthesis, neutron]*
- Samantha L. Kristufek, Thora R. Maltais, Eleanor G. Tennyson, **Naresh C. Osti**, Dvora Perahia, Andrew G. Tennyson and Rhett C. Smith, “*Bipyridyl-modified phosphonium polyelectrolytes: synthesis, photophysics, metal ion coordination and layer-by-layer assembly with anionic conjugated polymers*” Polym. Chem., **2013**, 4, 5387-5394 [synthesis, AFM]*
- Sabina Maskey, **Naresh C. Osti**, Dvora Perahia, Gary S. Grest, *Poly-Dots: Soft Conjugated Polymeric Nanoparticles*, ACS Macro Lett., **2013**, 2, pp 700–704 [computational, neutron]*
- Dilru R. Ratnaweera, Umesh M. Shrestha, **Naresh C. Osti**, Chung-Mien Kuo, Stephen Clarson, Ken Littrell, Dvora Perahia, *Self-Assembly of Semi-Fluorinated Diblock Copolymer in a Selective Solvent*”, Soft Matter, **2012**, 8, 2176-2184. [Neutron]*
- Eleanor G. Tennyson, Susan He, **Naresh C. Osti**, Dvora Perahia and Rhett C. Smith, *Luminescent phosphonium polyelectrolyte prepared from a diphosphine chromophore: synthesis, photophysics, and layer-by-layer assembly*, J. Mater. Chem., **2010**, 20, 7984–7989 [Synthesis, AFM]*

*In all papers, I am the major neutron and microscopy expert.

Presentations Oral

- **Naresh C. Osti**, Sidath I. Wijesinghe, Manjula Senanayake, Anuradhi Wickramasinghe, Thusitha N. Etampawala, Dvora Perahia, “*Salt Effects on the Structure and Stability of Ionizable Polydots - SANS Study*” APS March Meeting, **2015**
- **Naresh C. Osti**, Thusitha N. Etampawala, Umesh M. Shrestha, Chris J. Cornelius, Souleymane O. Diallo, Dvora Perahia, “*Dynamics of water in sulfonated poly(phenylene) membranes*”, ACNS Meeting, Knoxville, TN, **2014**
- **Naresh C. Osti**, Sidath I. Wijesinghe, Thusitha N. Etampawala, Dvora Perahia “*Structure and Conformation of Ionic Conjugated Polymers: Polydots*”, APS March Meeting, **2014**

- **Naresh C. Osti**, Thusitha Etampawala, Umesh M. Shrestha, Sidath Wijesinghe, Dvora Perahia, “*Effects of Solvents on Confinement of Conjugated Polymer into Soft Nanoparticle*”, APS March Meeting **2013**
- **Naresh C. Osti**, Dilru R. Ratnaweera, Thusitha N. Etampawala, Umesh M. Shrestha, Dvora Perahia, “*Structure and Assembly of Polymeric Dots Formed by Conjugated Polymers*”, APS March Meeting, **2012**
- **Naresh C. Osti**, Thusitha N. Etampawala, Umesh M Shrestha, Dvora Perahia, “*Dynamics of water in sulfonated poly(phenylene) membranes*”, APS March Meeting, **2011**
- Thusitha Etampawala, Dilru R. Ratnaweera, Umesh M. Shrestha, **Naresh C. Osti**, Dvora Perahia, “*Interfacial Effects on Pentablock Ionomer Thin Films*”, APS March Meeting, **2011**
- **Naresh C. Osti**, Dilru R. Ratnaweera, Thusitha Etampawala, Dvora Perahia, “*Assembly of Conjugated Polymers- Gold Nanoparticles*”, APS March Meeting, **2010**
- **Naresh C. Osti**, Madhusudan Tyagi, Dilru R. Ratnaweera, Uwe H.-F. Bunz, Dvora Perahia, “*Dynamics in Complex Fluids Formed by Conjugated Polymers*”, APS March Meeting, **2009**

Poster

- **Naresh C. Osti**, Michael Naguib Abdelmalak, Eugene Mamontov, Yury Gogotsi, David J. Wesolowski, “*Study of Effects of Ions on the Dynamics of Water Confined between Two-Dimensional Layers of Titanium Carbide, MXenes, Using Quasi-elastic Neutron Scattering*” Gordon Research Conference on Neutron Scattering, Hong Kong, China, June 21-26, **2015**
- **Naresh C. Osti**, Thusitha Etampawala, Umesh M. Shrestha, Sidath Wijesinghe, Dvora Perahia, “*Effects of Solvents on Confinement of Conjugated Polymer into Soft Nanoparticle*”, Neutron and Nano User Meeting, Oak Ridge National Laboratory, TN, August 12 -15, **2013**
- **Naresh C. Osti**, Thusitha N. Etampawala, Flint Pierce , Chris J. Cornelius , Gary S. Grest, Dvora Perahia, “*Dynamics of Ionic Polymers at Interfaces: Key to Enhanced Longevity of Clean Energy Devices : Neutron Scattering and Molecular Dynamics Simulation Studies*”, Department of Energy, July 22 -25, **2012**

- Thusitha N. Etampawala, **Naresh C. Osti**, Umesh M. Shrestha, Dvora Perahia, “*Interfacial effects on a pentablock ionomers*”, Center for Integrated Nanotechnologies user conference, Albuquerque, NM September 14 -15, **2011**
- **Naresh C. Osti**, Thusitha N. Etampawala, Umesh M. Shrestha, Chris J. Cornelius, Dvora Perahia, “*Dynamics of water in sulfonated polyphenylene membranes*” , Center for Integrated Nanotechnologies user conference, Albuquerque, NM, September 14 -16, **2011**
- **Naresh C. Osti**, Sabina Maskey, Madhusudan Tyagi, Uwe H.F. Bunz, Dvora Perahia, “*Dynamics and Conformation of Conjugated Polymers in Solution*” International Conference on Neutron Scattering, Knoxville, TN, May 3-7, **2009**

Experimental and Instrumental Techniques

- X-ray and Neutron scattering techniques (Wide angle scattering, Small angle scattering, X-ray diffraction, Reflectivity, Inelastic scattering)
- Surface characterization techniques (Atomic force microscopy, Contact angle, Light polarizable microscope)
- Thermal analysis techniques (DSC, TGA)
- Other spectroscopic techniques (UV-vis, IR, NMR, Atomic absorption and Fluorescence spectroscopy,)

Software and Programming

- Data analysis software – Origin, Igor, Excel, Peak analysis software, SasFit (for spectroscopic, scattering and diffraction techniques)
- Windows operating systems, Microsoft office, EndNote and Refwork.

Professional Training

- Second Target Station Workshop, October 27-29, 2015
- SNS/HFIR User Group Meeting, October 26-27, 2015
- 2014, June 5-6, Ultra Small Angle Scattering Workshop, Oak Ridge National Laboratory, TN
- 2013, August 12-15, Neutron and Nano User Meeting, Oak Ridge National Laboratory, TN
- 2011, April 18-20, SANS data reduction and data analysis workshop, ORNL, Oak Ridge, TN

- 2009, June 22-26, Summer School on the Fundamentals of Neutron Scattering, NIST Center for Neutron Scattering, Gaithersburg, MD

Professional Associations

- American Physical Society
- Member of Neutron Scattering Society of America (NSSA)

References

Dr. Eugene Mamontov (Postdoc supervisor)
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