

## Daniel J. Sandberg Curriculum Vitae

### Contact Information

Mail (Work):  
Department of Chemistry  
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### Education

Cum Laude Bachelor's Degree Chemistry (2007) - University of Connecticut  
Minor Degree Mathematics (2007) - University of Connecticut  
Minor Degree Business (2007) - University of Connecticut  
Roland Undergraduate Thesis Award Winner  
University Scholar  
New England Scholar 2004  
Honors Scholar  
Research Experience for Undergraduates (Summer 2006)  
Research Experience for Undergraduates (Summer 2005)  
Research Experience for Undergraduates (Summer 2004)

### Experience

- Computer Programming:
  - C/C++ Language
  - Basic (Realbasic, Mathscriptor)
  - FORTRAN 77, FORTRAN 90, FORTRAN 95
- Computer Simulation and Modeling:
  - Molecular Orbital Modeling – MOPAC7, Gaussian 03
  - Molecular Dynamics Simulation – CHARMM, LAMMPS
  - Monte-Carlo Simulations
- Terahertz Spectroscopy
- Nanomaterials and Polymer Composite Synthesis and Analysis
  - Air-free Synthesis, Glovebox and Vacuum Pump Maintenance
  - Static/Dynamic Light Scattering Spectroscopy (SLSS/DLSS)
  - Atomic Force Microscopy (AFM)
  - Gel Permeation Chromatography (GPC)
  - Thermal Gravimetric Analysis (TGA)
  - Transmission Electron Microscopy (TEM)
  - Nuclear Magnetic Resonance Spectroscopy (NMR)
  - Gas Chromatography / Mass Spectroscopy (GC/MS)
  - High-Performance Liquid Chromatography (HPLC)
  - Microscopy / Benchtop Infrared Spectroscopy (FTIR)

### Prior Positions

University of Connecticut - Department of Chemistry

Position: Department Fellow (Graduate)

Duration: Summer 2007

Project Detail: Terahertz Spectroscopy of Light Sensitive Proteins  
Prediction of THz Spectra by Computer Modeling and CHARMM Dynamics  
MOPAC and MNDOCI Programming

Contact: Connie R. Birge (860) 486-6720  
Connie.Birge@gmail.com

University of Connecticut - Department of Physics

Position: Research Investigator (Undergraduate)

Duration: Fall 2005 - Spring 2007

Project Detail: Molecular Dynamics and Monte Carlo Simulations of Polyelectrolyte Brushes  
Theoretical Analysis of Polyelectrolyte Brush Conformations  
Computer Cluster Maintenance

Contact: Andrey V. Dobrynin (860) 486-9061  
AVD@mail.ims.uconn.edu

University of Connecticut - Department of Materials Science

Position: Research Investigator (Undergraduate)

Duration: Fall 2003 - Spring 2007

Project Detail: Synthesis of nanocomposite materials  
Synthesis of polymer and polyelectrolyte brushes  
Instrument analysis

Contact: Thomas A.P. Seery (860) 486-1337  
Seery@mail.ims.uconn.edu

### Publications

#### *Undergraduate*

Sandberg, Daniel J.; Carrillo, Jan-Michael Y.; Dobrynin, Andrey, V. Molecular Dynamics Simulations of Polyelectrolyte Brush. From Single Chains to Bundle of Chains. *Accepted by Langmuir July 2007, in press.*

Sandberg, Daniel J.; Seery, Thomas A.P.; Dobrynin, Andrey V. A Study of Polyelectrolyte Brushes. *J. Polym. Prep.* **2007** 48(1); 501.

Sandberg, Daniel J.; Seery, Thomas A.P. Polyoxanorbornene-silica nanocomposites from silica nanoparticles. *J. Polym. Prep.* **2005** 46(2); 70-71.

### Presentations

#### *Undergraduate*

American Chemical Society National Meeting 2007- Chicago, IL Conference Center *Spherical Polyelectrolyte Brushes*

American Physics Society National Meeting 2007 - Denver, CO. Conference Center *Spherical Polyelectrolyte Brush Theory*

National Science Foundation's Research Experience for Undergraduates Symposium 2006 – University of Connecticut *A Study of Polyelectrolyte Brushes in the Osmotic Regime by Molecular Dynamics Simulations*

American Chemical Society Northeast Section 2006 - Massachusetts Institute of Technology  
*Computational Modeling of Polymer Brushes grown from Spherical Substrates in  $\theta$ -solvent*

Frontiers for Undergraduate Research Poster Exhibition 2006 - University of Connecticut A  
*Parallel Study of Polymer Nanocomposites*

American Chemical Society National Conference 2005 - Washington D.C. Conference Center  
*Polyoxanorbornene Nanocomposites from Silica Nanoparticles*

National Science Foundation's Research Experience for Undergraduates Symposium 2005 –  
University of Connecticut *Polymer Silica Nanocomposite Synthesis*

American Chemical Society Connecticut Valley Section Regional Symposium 2005 - Holyoke  
College, Connecticut *Synthesis of Silica-Polyoxanorbornene Nanocomposites by Surface-  
Initiated Ring-Opening Metathesis Polymerization*

Frontiers for Undergraduate Research Poster Exhibition 2005 - University of Connecticut  
*Synthesis of Silica-Polyoxanorbornene Nanocomposites by Surface-Initiated Ring-  
Opening Metathesis Polymerization*

National Science Foundation's Research Experience for Undergraduates Symposium 2004 –  
University of Connecticut *Effect of End-Functional Groups and Structure of Cyclic  
Olefin Monomers on Polymer Polydispersity via Ring-Opening Metathesis  
Polymerization*

*Other Affiliations*

*Graduate*

American Chemical Society Graduate Student Member - 2007 to present

*Undergraduate*

Student Affiliation of the American Chemical Society (SAACS) - Member 2003 to 2007

Math Club

Physics Club

Red Cross Blood Drive Student Organizational Committee

UCONN SCUBA Club