Roman S. Voronov

Ph. D. Candidate / U.S. Citizen

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Education:

University of Oklahoma, 2009	Chemical Engineering	Ph.D. (*Expected*)
University of Oklahoma, 2006	Chemical Engineering	M.S.
University of Oklahoma, 2003	Chemical Engineering / Physics Minor	B.S. *Summa Cum Laude*

Research Interests:

- Multiphase Flow For Enhanced Oil Recovery (Lattice Boltzmann Method)
- Reactive Mass & Heat Transport in Porous Media (Lagrangian Scalar Tracking)
- Bone Tissue Engineering & Biomedical Imaging (Micro Computed Tomography / Micro MRI)
- Superhydrophobic Friction Drag Reducing Surfaces (Molecular Dynamics / Monte Carlo Methods)
- Industrial Optimization & Financial Risk Modeling (Process Simulation / Linear Programming / GAMS)
- High Performance Super Computing (Message Passing Interface / Fortran)

Future Direction: CO_2 Ground Storage, Cell Dynamics Modeling, Hydrate Inhibition

Research Publications:

1. **R. S. Voronov**, S. VanGordon, V.I. Sikavitsas and D.V. Papavassiliou, **2009**. "Nutrient Transport Via Monte Carlo Based Methods Within Artificial Bone Tissue Constructs Imaged With Micro-CT". (*In Progress)*
2. **R. S. Voronov**, S.B. VanGordon, T.B. Blue, R.L. Shambaugh, V.I. Sikavitsas and D.V. Papavassiliou, **2009**."Comparison of Fiber Scaffolds to Salt Leeched Scaffold in Bone Tissue Engineering Applications via Computational Fluid Dynamics Coupled Based On Micro-CT Imaging". (*In Progress*)
3. **R. S. Voronov**, S. VanGordon, V.I. Sikavitsas and D.V. Papavassiliou, **2009**. "Computational Modeling of Flow Induced Shear Stresses Within 3D Salt-Leached Porous Scaffolds Imaged via Micro-CT". J. Biomech., (*Under Review*)
4. **R.S. Voronov**, D.V. Papavassiliou and L.L. Lee, **2008**: "Review of Fluid Slip over Superhydrophobic Surfaces and Its Dependence on the Contact Angle." Ind. Eng. Chem. Res., 47 (8), 2455-2477. 10.1021/ie0712941
5. **R. Voronov**, D. Papavassiliou and L. Lee, **2007**: "Slip Length and Contact Angle Over Hydrophobic Surfaces." Chemistry Physics Letters, 441 (4-6): 273-276, doi: 10.1016/j.cplett.2007.05.013.
6. **R. Voronov**, **2006**: "Slip Boundary Flow on Nanoscale Superhydrophobic Interfaces: A Molecular Dynamics Study - Slip Length as a Function of Wetting Properties." MS thesis, School of Chemical, Biological & Materials Engineering, University of Oklahoma
7. **R. Voronov**, D. Papavassiliou and L. Lee, **2006**: "Boundary Slip and Wetting Properties of Interfaces: Correlation of the Contact Angle with the Slip Length." Journal of Chemical Physics, 124, 204701.

Research Proposals:

NSF-TeraGrid Medium Allocation "Investigation of Flow and Nutrient Transport in 3D Porous Scaffolds Used for Bone Tissue Growth" Grant Number CTS090017 (*Co-Author*)

Teaching Assistant Experience: Graduate ChE Math, Pro II / GAMS Expert, Senior ChE Capstone, Advanced ChE Design, Transport, Unit Operations Lab 1 & 2, High School Physical Sciences 9th Grade

Conference Presentations: American Institute of Chemical Engineers (AIChE 2006-2009); Biomedical Engineering Society (BMES 2008); Biomaterials (2009); OU Supercomputing Symposium (OSCER 2004-2009)

Synergistic Activities:

- Department of Energy fellowship to attend ACTS 2009 (Advanced CompuTational Software) Collection workshop at Laurence Berkeley National Laboratory

- National Science Foundation "Engineering In Practice" fellowship. Completed "Teaching Science and Math Activities in Secondary Education" course; taught Physical Sciences courses in 9th grade of a rural Oklahoma high school (10 hrs per week); prepared a teaching portfolio.

- Appointed several times as Pro-II process simulator package & GAMS expert. Duties included lecturing on the above-mentioned package to undergraduate students, as well as developing homework problems and holding office hours.

Collaborators in Last Four Years:

Thesis Advisors – Dimitrios V. Papavassiliou (OU), Gyeong S. Hwang (University of Texas at Austin), Lloyd L. Lee (OU)

Graduate Advisors – Matthias U. Nollert (OU); Isaac C. Sanchez (University of Texas at Austin)

Collaborators – D.V. Papavassiliou(OU), V.I. Sikavitsas(OU), H.J. Neeman (OU Supercomputing Center for Education & Research), G.S. Hwang(University of Texas at Austin), R.N. Parthasarathy(OU), L.L. Lee(OU), J.K. Newman(OU), R.A. Towner(Oklahoma Medical Research Facility).

Awards: Advanced CompuTational Software (ACTS) Collection Workshop (LBNL-DOE 2009); National Science Foundation EIP Fellow (2008); Department of Energy Computational Science Graduate Fellowship (Runner-Up 2007); Temple Foundation Graduate Fellowship (UT, 2006); Graduate Student Senate Outstanding Graduate Teaching Assistant Award (OU, 2006); Advanced Design Mention of Honor Capstone Project(OU, 2003); Member of Best Design Lab Group Award (OU, 2002); Alumni/Harry W. Denton/Sam A. Wilson Memorial Scholarships (OU, 1999-2002)

Professional Memberships: American Institute of Chemical Engineers (AIChE); Biomedical Engineering Society (BMES); Society for Biomaterials (SFB); OU Chemical Engineering Graduate Society (OU ChEGS); OU Engineers' Club

Computer Skills: MPI, Fortran, Matlab, TecPlot, Pro-II, GAMS, Mathematica, SigmaPlot, LAMMPS MD Simulator, Fluent, and HTML

Extra-Curricular Activities: European Student Organization ('09); University of Oklahoma Graduate Senator ('05-'06); President & Founder of RUSSA – Russian-Speaking Student Association ('05-'07); Chemical Engineering Graduate Society (ChEGS) ('04 -'06); American Institute of Chemical Engineers (AIChE) & Engineer's Club; Honors Student Association, University of Oklahoma ('99 - '03)

Languages: Equally fluent in *Russian* and English

References: Provided Upon Request