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Education

Ph.D. Physics, University of Connecticut
M.S. Physics, University of Connecticut
B.S. Engineering Physics, Lehigh University

Appointments

San Diego Supercomputer Center
University of California San Diego, La Jolla, CA

3/2011 – present: Gordon Supercomputing Applications Lead

*9/2005 – 3/2011: Cryo-electron microscopy laboratory (PI: Timothy Baker)
Senior software developer /Research Scientist*

*6/2001 – 9/2005: Alliance for Cellular Signaling (AfCS), Bioinformatics Laboratory
Project Manager*

3/1997 – 6/2001: Scientific Applications Group

Laboratory for Computational Physics and Fluid Dynamics
Naval Research Laboratory, Washington, DC

1991 – 1993: Postdoctoral Fellow

1993 – 1997: Research Scientist

Peer Reviewed Publications

1. Ku, T.-H., M.-P. Chien, M. P. Thompson, R. S. Sinkovits, N. H. Olson, T. S. Baker, and N. C. Gianneschi (2011). Controlling and switching the morphology of micellar nanoparticles with enzymes. *J. Am. Chem. Soc.* **133:8392-8395**.
2. Gurda, B. L., K. N. Parent, H. Bladek, R. S. Sinkovits, M. A. DiMattia, C. Rence, A. Castro, R. McKenna, N. Olson, K. Brown, T. S. Baker, and M. Agbandje-

- McKenna (2010). Human bocavirus capsid structure: Insights into the structural repertoire of the Parvoviridae. *J. Virol.* **84**:5880-5889.
3. Parent, K. N., R. S. Sinkovits, M. M. Suhanovsky, C. M. Teschke, E. H. Egelman, and T. S. Baker (2010). Cryo-reconstructions of P22 polyheads suggest that phage assembly is nucleated by trimeric interactions among coat proteins. *Phys. Biol.* **7**:045004.
 4. Seitsonen, J., P. Susi, O. Heikkilä, R. S. Sinkovits, P. Laurinmäki, T. Hyypiä and S. J. Butcher (2010). Interaction of $\alpha V\beta 3$ and $\alpha V\beta 6$ integrins with Human parechovirus 1. *J. Virol.* **84**: 8509-8519.
 5. Gurda, B. L., K. N. Parent, H. Bladek, R. S. Sinkovits, M. A. DiMattia, C. Rence, A. Castro, R. McKenna, N. Olson, K. Brown, T. S. Baker, and M. Agbandje-McKenna (2010). Human Bocavirus capsid structure: Insights into the structural repertoire of the Parvoviridae. *J. Virol.* **84**:5880-5889.
 6. Sinkovits, R. S., and T. S. Baker (2010). A tale of two symmetrons: Rules for construction of icosahedral capsids from trisymmetrons and pentasymmetrons. *J. Struct. Bio.* **170**:109-116.
 7. Pan, J., L. Dong, L. Lin, W. F. Ochoa, R. S. Sinkovits, W. M. Havens, M. L. Nibert, T. S. Baker, S. A. Ghabrial, and Y. J. Tao (2009). Atomic structure reveals the unique capsid organization of a dsRNA virus. *Proc. Natl. Acad. Sci. USA.* **106**:4225-4230.
 8. Ochoa, W. F., W. M. Havens, R. S. Sinkovits, M. L. Nibert, S. A. Ghabrial, and T. S. Baker (2008). Partitivirus structure reveals a 120-subunit, helix-rich capsid with distinctive surface arches formed by quasisymmetric coat-protein dimers. *Structure* **16**:776-786.
 9. Tang, J., W. F. Ochoa, R. S. Sinkovits, B. T. Poulos, S. A. Ghabrial, D. V. Lightner, T. S. Baker, and M. L. Nibert (2008). Infectious myonecrosis virus has a totivirus-like, 120-subunit capsid, but with fiber complexes at the fivefold axes. *Proc. Natl. Acad. Sci. USA.* **105**:17526-17531.
 10. Yan X., R. S. Sinkovits, and T. S. Baker (2007). AUTO3DEM - an automated and high throughput program for image reconstruction of icosahedral particles. *J. Struct. Bio.* **157**:73-82.
 11. Lee, J.A., R.S. Sinkovits, D. Mock, L. Rab, J. Cai, P. Yang, B. Saunders, R.C. Hsueh, S. Choi, S. Subramaniam, and R. Scheuermann. (2006). Components of the antigen processing and presentation pathway revealed by gene expression microarray analysis following B cell antigen receptor (BCR) stimulation. *BMC Bioinformatics* **7**:237.

12. Sambrano, G.R., G. Chandy, S. Choi, D. Decamp, R. Hsueh, K.M. Lin, D. Mock, N. O'Rourke, T. Roach, H. Shu, B. Sinkovits, M. Verghese, and H. Bourne (2002). Unraveling the signal-transduction network in B lymphocytes, *Nature* **420:708-710**.
13. Gilman, A.G., M.I. Simon, H.R. Bourne, B.A. Harris, R. Long, E.M. Ross, J.T. Stull, R. Taussig, A.P. Arkin, M.H. Cobb, J.G. Cyster, P.N. Devreotes, J.E. Ferrell, D. Fruman, M. Gold, A. Weiss, M.J. Berridge, L.C. Cantley, W.A. Catterall, S.R. Coughlin, E.N. Olson, T.F. Smith, J.S. Brugge, D. Botstein, J.E. Dixon, T. Hunter, R.J. Lefkowitz, A.J. Pawson, P.W. Sternberg, H. Varmus, S. Subramaniam, R.S. Sinkovits, J. Li, D. Mock, Y. Ning, B. Saunders, P.C. Sternweis, D. Hilgemann, R.H. Scheuermann, D. DeCamp, R. Hsueh, K.M. Lin, Y. Ni, W.E. Seaman, P.C. Simpson, T.D. O'Connell, T. Roach, S. Choi, P. Eversole-Cire, I. Fraser, M.C. Mumby, Y. Zhao, D. Brekken, H. Shu, T. Meyer, G. Chandy, W.D. Heo, J. Liou, N. O'Rourke, M. Verghese, S.M. Mumby, H. Han, H.A. Brown, J.S. Forrester, P. Ivanova, S.B. Milne, P.J. Casey, T.K. Harden, J. Doyle, M.L. Gray, S. Michnick, M.A. Schmidt, M. Toner, R.Y. Tsien, M. Natarajan, R. Ranganathan, and G.R. Sambrano (2002). Overview of the Alliance for Cellular Signaling, *Nature* **420:703-706**.
14. Sen, S., M. Manciu, R. S. Sinkovits, and A. J. Hurd (2001). Nonlinear acoustics in granular assemblies. *Granular Matter* **3:33-39**.
15. Sinkovits, R. S., S. Sen, and J. C. Phillips (1999) Slow algebraic relaxation in quartic potentials and related results. *Phys. Rev. E* **59:6497-6512**.
16. Nguyen, T. X., C. K. Oh , R. S. Sinkovits, J. D. Anderson, and E. S. Oran (1997). Simulations of high-Knudsen number flows in a channel-wedge configuration. *AIAA Journal* **35:1486-1492**.
17. Oh, C. K., E. S. Oran, and R. S. Sinkovits (1997) Computations of high-speed high-Knudsen-number microchannel flows. *J. Thermophysics and Heat Transfer* **11:497-505**.
18. Sinkovits, R. S. (1997) Non-equilibrium hydrogen temperatures under diamond chemical vapor deposition conditions. *Appl. Phys. Lett.* **70:78-80**.
19. Sen, S. and R. S. Sinkovits (1996). Sound propagation in impure granular columns. *Phys. Rev. E* **54: 6857-6865**.
20. Sen, S, R. S. Sinkovits, and S. Chakravarti (1996). Relaxation of classical particles in anharmonic multi-well potentials. *Physica A* **224:292-301**.
21. Oh, C. K., R. S. Sinkovits, B. Z. Cybyk, E.S. Oran, and J. P. Boris (1996). Massive parallelization of DSMC combined with the monotonic Lagrangian grid, *AIAA J.* **34:1363-1370**.

22. Sinkovits, R. S., C. R. DeVore, and V. A. Shamamian (1996). Kinetic effects in the chemistry of diamond CVD source gases and implications for diamond growth. *Diamond Relat. Mater.* **5**: 1344-1354.
23. Sinkovits, R. S. and C.R. DeVore (1996). Direct simulation Monte Carlo study of H/H₂ and H/H₂/CO mixtures for diamond chemical vapor deposition. *J. Appl. Phys.* **80**: 6474-6488.
24. Sen, S, R. S. Sinkovits, and S. Chakravarti (1996). Algebraic relaxation laws for classical particles in 1d anharmonic potentials. *Phys. Rev. Lett.* **77**: 4855-4859.
25. Sinkovits, R. S., C. R. DeVore, V. A. Shamamian, and C. K. Westbrook (1995). An analysis of gas phase ethanol/water chemistry for diamond CVD. *Diamond Relat. Mater.* **4**:1277-1288.
26. Sinkovits, R. S. and S. Sen (1995). He adsorption and intercalation in C₆₀ fullerite crystals. *Phys. Rev. B* **51**:13841-13844.
27. Sinkovits, R. S. and S. Sen (1995). Nonlinear dynamics in granular columns. *Phys. Rev. Lett.* **74**:2686-2689.
28. Pandey, R. B., R. S. Sinkovits, J. P. Boris, and E.S. Oran (1994). Simulation of the growth of a binary composite by a controlled thermal annealing. *J. Phys. I France* **4**:1427-1438.
29. Sinkovits, R. S. (1994). Scaling relations for the slippery ballistic growth model. *Physica A* **209**:1-8.
30. Woods, A. M., R. S. Sinkovits, and R. H. Bartram (1994). Computer modeling of thermal quenching of chromium photoluminescence in fluoride elpasolites. *J. Phys. Chem. Solids* **55**:91-97.
31. Sinkovits, R. S. and R. B. Pandey (1994). Computer simulation of random sequential adsorption of two interacting species on a lattice. *J.Stat. Phys.* **74**:457-463.
32. Woods, A. M., R. S. Sinkovits, J. C. Charpie, W. L. Huang, R. H. Bartram, and A. R. Rossi (1993). Computer modeling of the optical properties of substitutional chromium impurities in halide elpasolites. *J. Phys. Chem. Solids* **54**:543-552.
33. Sinkovits, R. S., J. P. Boris and E. S. Oran (1993). A technique for regularizing the structure of the monotonic Lagrangian grid. *J. Comput. Phys.* **108**:368-372.

34. Phillips, L., R. S. Sinkovits, E. S. Oran and J. P. Boris (1993). The interaction of shocks and defects in Lennard-Jones crystals. *J. Phys. Condens. Matter* **5:6357-6376**.
35. Bartram, R. H., A. M. Woods, R. S. Sinkovits, J. C. Charpie, and A. R. Rossi (1991). Embedded cluster modeling of excited chromium impurities in halide elpasolites. *Radiation Effects and Defects in Solids* **627:119-121**.
36. Sinkovits, R. S. and R. H. Bartram (1991). Computer modeling of lattice dynamics in halide elpasolites. *J. Phys. Chem. Solids* **52:1137-1144**.

Book Chapters

1. Tang, J., R.S. Sinkovits, and T.S. Baker (2011). Three-dimensional asymmetric reconstruction of tailed bacteriophage, *Meth. Enzym.* (J. J. Grant Ed.) **482: 185-210**.
2. Sinkovits, R.S. and T.S. Baker (2010). Structure Determination of Icosahedral Viruses Imaged by Cryo-electron Microscopy in *Structural Virology* (Agbandge-McKenna, M. and R. McKenna Eds.)
3. Sinkovits R.S. and T.S. Baker (2009). Three-dimensional image reconstruction of icosahedral viruses from cryo-electron microscopy data in *3D-EM in Life Sciences* (Orlova, E. Ed.) **3.13**.

Recent Conference Proceedings

1. Myers, J.A., M. Tatineni, and R.S. Sinkovits (2011). Subset removal on massive data with Dash, In *Proceedings of the 2011 TeraGrid Conference (TG11)*, Salt Lake City, UT, July 18-21.
2. Sinkovits, R.S., P. Cicotti, S. Strande, M. Tatineni, P. Rodriguez, N. Wolter, and N. Balac, In *Proceeding of the 17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD11)*, San Diego, CA

Online articles

The following articles appeared in a short-lived San Diego Supercomputer Center e-journal dedicated to topics in scientific computing and performance optimizations.

Sinkovits, R.S. (1999). Vector intrinsic functions I: CRAY T3E
http://www.sdsc.edu/~sinkovit/SCAN_t3e_vector.html

Sinkovits, R.S. (1999). Vector intrinsic functions II: IBM SP
http://www.sdsc.edu/~sinkovit/SCAN_ibm_vector.html

Sinkovits R.S. (1999). Vector intrinsic functions III: Sun HPC Servers

http://www.sdsc.edu/~sinkovit/SCAN_sun_vector.html

Sinkovits R.S. (1999). Shared memory programming on the IBM POWER3 nodes I:

Parallelization of simple loops

http://www.sdsc.edu/~sinkovit/SCAN_ibm_shared.html

Computational skills

- Extensive programming experience using C, Fortran 90, Perl, Python
- Knowledge of relational databases (e.g. Oracle) and SQL
- Code parallelization using MPI and OpenMP
- Basic Linux and Rocks compute cluster systems administration
- GUI development using Motif
- 15+ years supercomputing experience

Additional training and certifications

- Linux/Unix System Administration Certificate (1/2011)
University of Illinois Office of Continuing Education