

Nathan S. Nichols

Contact Information

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Education

The University of Vermont, Burlington, VT, USA

Ph.D., [Materials Science](#), August 2014 to Present

- Advisor: [Dr. Adrian Del Maestro](#)
- Area of Study: Computational Condensed Matter Physics

Certificate of Graduate Study in Complex Systems, [Vermont Complex Systems Center](#), August 2014 to Present

Hartwick College, Oneonta, NY, USA

B.S., [Physics](#), [Chemistry](#), and [Mathematics](#), May 2014

- With Honors in Physics, Chemistry, and Mathematics

Refereed Journal Publications (total: 4, h-index: 3, citations: 78)

- [1] Nichols, N. S., Prisk, T. R., Warren, G., Sokol, P., Del Maestro, A. Dimensional reduction of helium-4 inside argon-plated MCM-41 nanopores *Physical Review B*, 102, 144505, 6 October 2020. doi:[10.1103/PhysRevB.102.144505](https://doi.org/10.1103/PhysRevB.102.144505)
- [2] Sengupta, S., Nichols, N. S., Del Maestro, A., and Kotov, V. N. Theory of Liquid Film Growth and Wetting Instabilities on Graphene. *Physical Review Letters*, 120, 236802, 8 June 2018. doi:[10.1103/PhysRevLett.120.236802](https://doi.org/10.1103/PhysRevLett.120.236802)
- [3] Nichols, N. S., Del Maestro, A., Wexler, C., and Kotov, V. N. Adsorption by design: tuning atom-graphene van der Waals interactions via mechanical strain. *Physical Review B*, 93, 205412, 6 May 2016. doi:[10.1103/PhysRevB.93.205412](https://doi.org/10.1103/PhysRevB.93.205412)
- [4] Cannon, J. et al. The Alfalfa “Almost Darks” Campaign: Pilot VLA HI Observations of Five High Mass-To-Light Ratio Systems. *The Astronomical Journal*, 149(2):72, January 2015. doi:[10.1088/0004-6256/149/2/72](https://doi.org/10.1088/0004-6256/149/2/72)

Preprint Publications

- [5] Yu, J. et al. Two-Dimensional Bose–Hubbard Model for Helium on Graphene *arXiv preprint arXiv:2102.11288*, 22 February 2021. [arXiv:2102.11288](https://arxiv.org/abs/2102.11288)

Conference Talks

- [1] Nichols, N., Prisk, T., Warren, G. T., Sokol, P. E., Vanegas, J. M., and Del Maestro, A.. [Confinement Potential Inside Rare Gas Plated MCM-41 Nanopores](#) In: *American Physical Society (APS) March Meeting 2020*, Virtual, March 15–19, 2021 (virtual).
- [2] Nichols, N., Del Maestro, A., Prisk, T., Warren, G. T., and Sokol, P. E.. [A Parameter Free Genetic Algorithm for Estimating the Dynamic Structure Factor at Zero and Finite Temperature](#) In: *American Physical Society (APS) March Meeting 2020*, Denver, CO, March 2–6, 2020 (virtual).
- [3] Nichols, N., Del Maestro, A., Prisk, T., Warren, G. T., and Sokol, P. E.. Quantum Monte Carlo simulation of superfluid helium confined inside pre-plated nanoporous materials In: *American Physical Society (APS) March Meeting 2019*, March 4–8, 2019; Boston, Massachusetts

	<p>[4] Nichols, N., Kotov, V., and Del Maestro, A.. Superfluid ^4He phases on strained graphene. In: <i>American Physical Society (APS) March Meeting 2017</i>, New Orleans, LA, March 13–17, 2017.</p> <p>[5] Nichols, N., Kotov, V., and Del Maestro, A.. Helium adsorption potential near mechanically deformed graphene. In: <i>American Physical Society (APS) March Meeting 2016</i>, Baltimore, MD, March 14–18, 2016.</p>
Conference Posters	<p>[1] Nichols, N., Grezkowiak, S., Murray, K., and Troischt, P.. L-Band Wide Follow-up Survey: Interesting Candidates and IDL Routines. In: <i>American Astronomical Society, AAS Meeting #223</i>, Washington, DC, January 5–9, 2014.</p> <p>[2] Nichols, N. and Troischt, P.. ALFALFA L-band Wide Followup Observations and IDL Routines In: <i>American Astronomical Society, AAS Meeting #221</i>, Long Beach, CA, January 6–10, 2013.</p> <p>[3] Nichols, N., Patterson, J., Weigel, C, and Troischt, P.. Group Membership and Dynamical Mass Estimates of Galaxy Group AWM3 In: <i>American Astronomical Society, AAS Meeting #219</i>, Austin, TX, January 8–12, 2012.</p>
Research Experience	<p>Del Maestro Group Member <i>University of Vermont</i> (Burlington, VT, USA) 2015–Present</p> <p>Research Assistant <i>University of Vermont</i> (Burlington, VT, USA) 2017–Present</p> <p>Undergraduate Researcher <i>Hartwick College</i> (Oneonta, NY, USA) 2010–2014</p>
Teaching Experience	<p>Teaching Assistant <i>University of Vermont</i> (Burlington, VT, USA) 2014–2017</p>
Professional Memberships	<p>American Physical Society (APS), Member, 2015–Present</p> <p>Materials Research Society (MRS), Member, 2014–2015</p> <p>Society of Physics Students (SPS), Member, 2012–Present</p> <p>Kappa Mu Epsilon Mathematics Honor Society (KME), Member, 2012–Present</p> <ul style="list-style-type: none"> • President of local chapter (2013–2014)
Service	<p>NanoDays at ECHO Lake Aquarium and Science Center March 2014</p> <ul style="list-style-type: none"> • Public outreach effort in nanoscale informal science education <p>STEM Fair Judge at Missisquoi Valley Union High School January 2018</p>
Programming, Scripting Languages, and High Performance Computing Experience	<ul style="list-style-type: none"> • C++, C, Julia, Python, UNIX shell scripting, cmake and GNU make scripts, SQL, IDL and others • Parallel Computing and GPU: HIP, CUDA-C++, OpenCL, Julia (multi-threading), Python (multiprocessing), and OpenMP • HPC Experience: Bridges-2, PSC Bridges, SDSC Comet, OSG, VACC Bluemoon, VACC BlackDiamond, VACC DeepGreen, Big Red • HPC Schedulers: Slurm, Moab/Torque, and HTCondor

Awards

- President's Scholarship, 2010–2014
- Dean's List, 2010–2014
- Freedman Prize in Natural Science, 2011 and 2013
- Otto Steinbach Memorial Scholarship in Chemistry, 2013
- David A. Diener Mathematics Achievement Award, 2012 and 2013
- Richard J. Kohlmeyer Award in Mathematics, 2012
- Outstanding Freshman Physics Award, 2011
- CRC Press Chemistry Achievement Award, 2011
- Marine Gunnery Sergeant John David Fry Scholarship, 2010–2014