Nicholas P. Stadie

Associate Professor
Department of Chemistry and Biochemistry
Montana State University
Bozeman, Montana, United States
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Birthdate: October 28, 1985
Birthplace: Calgary, Canada

Ph.D.	Materials Science, California Institute of Technology	2013
M.S.	Materials Science, California Institute of Technology	2008
B.S.	Chemistry, Arizona State University	2007

Our research spans the fields of solid-state, physical, and materials chemistry. We explore synthesis routes and design criteria for carbon- and silicon-based materials, and investigate their applications as energy storage materials. Understanding gas physisorption phenomena at the solid interface is also a fundamental objective of our work, via classical and statistical thermodynamics.

Professional Experience:

Associate Professor — 2023–Present
Department of Chemistry and Biochemistry
Montana State University (MSU)

Visiting Professor — Spring 2025
Department of Chemistry
University of British Columbia (UBC)

Assistant Professor — 2017–2023
Department of Chemistry and Biochemistry
Montana State University (MSU)

Visiting Assistant Professor — Spring 2022
Department of Chemistry
Massachusetts Institute of Technology (MIT)

Research Fellow — 2015–2016
with Prof. Maksym Kovalenko
Laboratory of Inorganic Chemistry
Eidgenössische Technische Hochschule (ETH) Zürich

Visiting Scientist — 2013–2015
with Prof. Brent Fultz
Department of Materials Science and Applied Physics
California Institute of Technology (Caltech)

Postdoctoral Scholar — 2013–2014
with Prof. Andreas Züttel and Dr. Andreas Borgschulte
Abteilung Wasserstoff und Energie
Swiss Federal Laboratories for Materials Science & Technology (Empa)

Graduate Research Assistant 2007–2012
with Prof. Brent Fultz and Dr. Channing Ahn
Department of Materials Science and Applied Physics
California Institute of Technology (Caltech)

Undergraduate Research Assistant 2005–2007
with Prof. Michael O'Keeffe
Department of Chemistry and Biochemistry
Arizona State University (ASU)

Select Publications:

1. C. Welty, E. L. Gormley, J. J. Oppenheim, M. Dincă, C. H. Hendon, N. P. Stadie, "Divergent Electrically Conductive Pathways in Yttrium-Based 2- and 3-Dimensional Metal-Organic Frameworks" **ACS Mater. Lett.**, 6 (8), 3909-3914 (2024).
2. D. McGlamery, C. McDaniel, D. M. Ladd, Y. Ha, M. A. Mosquera, M. T. Mock, N. P. Stadie, "Halide-Free Synthesis of Metastable Graphitic BC_3" **Chem. Sci.**, 15, 4358-4363 (2024).
3. I. P. Gordon, G. Suenram, D. McGlamery, N. P. Stadie, "Synthesis and Characterization of Aluminum-Doped Graphitic Carbon" **MRS Comm.**, 14 (3), 323-329 (2024).
4. D. McGlamery, C. McDaniel, W. Xu, N. P. Stadie "Hydrogen-Type Binding Sites in Carbonaceous Electrodes for Rapid Lithium Insertion" **ACS Appl. Mater. Inter.**, 15 (33), 39211-39217 (2023).
5. I. P. Gordon, W. Xu, S. Randak, T. R. Jow, N. P. Stadie, "Stabilizing Effects of Phosphorus-Doped Silicon Nanoparticle Anodes in Lithium-Ion Batteries" **Chem. Mater.**, 35 (2), 549-557 (2023).
6. W. Xu, C. Welty, M. R. Peterson, J. A. Read, N. P. Stadie, "Exploring the Limits of the Rapid-Charging Performance of Graphite as the Anode in Lithium-Ion Batteries" **J. Electrochem. Soc.**, 169 (1), 010531 (2022).
7. R. Rowsey, E. E. Taylor, S. Irle, N. P. Stadie, R. Szilagyi, "Methane Adsorption on Heteroatom-Modified Maquettes of Porous Carbon Surfaces" **J. Phys. Chem. A**, 125 (28), 6042-6058 (2021).
8. S. S. Samantaray, S. T. Putnam, N. P. Stadie, "Volumetrics of Hydrogen Storage by Physical Adsorption" **Inorganics**, 9 (6), 45 (2021).
9. D. McGlamery, A. A. Baker, Y.-S. Liu, M. Mosquera, N. P. Stadie, "Phonon Dispersion Relation of Bulk Boron-Doped Graphitic Carbon" **J. Phys. Chem. C**, 124 (42), 23027-23037 (2020).
10. E. E. Taylor, K. Garman, N. P. Stadie, "Atomistic Structures of Zeolite-Templated Carbon" **Chem. Mater.**, 32 (7), 2742-2752 (2020).
11. R. J.-C. Dubey, J. Nüssli, L. Piveteau, K. V. Kravchyk, M. D. Rossell, M. Campanini, R. Erni, M. V. Kovalenko, N. P. Stadie, "Zeolite-Templated Carbon as the Cathode for a High Energy Density Dual-Ion Battery" **ACS Appl. Mater. Inter.**, 11 (19), 17686-17696 (2019).
12. H. Swenson, N. P. Stadie "Langmuir's Theory of Adsorption: a Centennial Review" **Langmuir**, 35 (16), 5409-5426 (2019). **Invited Feature Article**
13. E. Billeter, D. McGlamery, M. Aebli, L. Piveteau, M. V. Kovalenko, N. P. Stadie, "Bulk Phosphorus-Doped Graphitic Carbon" **Chem. Mater.**, 30 (14), 4580-4589 (2018).
14. N. P. Stadie, E. Billeter, L. Piveteau, K. Kravchyk, M. Döbeli, M. V. Kovalenko, "Direct Synthesis of Bulk Boron-Doped Graphitic Carbon" **Chem. Mater.**, 29 (7), 3211-3218 (2017).
15. N. P. Stadie, S. Wang, K. V. Kravchyk, M. V. Kovalenko, "Zeolite-Templated Carbon as an Ordered Microporous Electrode for Aluminum Batteries" **ACS Nano**, 11 (2), 1911-1919 (2017).
16. N. P. Stadie, M. Murialdo, C. C. Ahn, B. Fultz, "Unusual Entropy of Adsorbed Methane on Zeolite-Templated Carbon" **J. Phys. Chem. C**, 119 (47), 26409-26421 (2015).
17. N. P. Stadie, E. Callini, B. Richter, T. R. Jensen, A. Borgschulte, A. Züttel, "Supercritical N_2 Processing as a Route to the Clean Dehydrogenation of Porous $Mg(BH_4)_2$" **J. Am. Chem. Soc.**, 136 (23), 8181-8184 (2014).
18. N. P. Stadie, M. Murialdo, C. C. Ahn, B. Fultz, "Anomalous Isosteric Enthalpy of Adsorption of Methane on Zeolite-Templated Carbon" **J. Am. Chem. Soc.**, 135 (3), 990-993 (2013).

Select Teaching Activity:

CHMY 558, “Classical and Statistical Thermodynamics” MSU, Primary Instructor	2017–Present
CHMY 373, “Physical Chemistry: Kinetics and Thermodynamics” MSU, Primary Instructor	2017–Present
CHMY 490, “Undergraduate Research” MSU, Research Advisor	2017–Present
CHMY 151, “Honors College Chemistry I” MSU, Primary Instructor	F 18, 22, 23
CHMY 153, “Honors College Chemistry II” MSU, Primary Instructor	S 23
US 103, “Learning Strategies” MSU, Co-Instructor	S 20, F 22, S 23

Awards and Honours:

Top 20 Most Downloaded Theses (Caltech Library Repository Statistics)	2013–Present
MSU Provost's Award for Creativity in Undergraduate Mentoring	2023
MSU Spirit of Discovery Award	2022
NSF EPSCoR Fellowship	2020
ACS PRF Doctoral New Investigator Award	2018
ACS NORM 2017 First Place (5k Fun Run)	2017
MH2014 Best Presentation Prize	2014
Caltech EAS Division Fellowship	2007
ASU Eyring Award	2007
ACS Analytical Chemistry Award	2006
ASU Bateman Physical Sciences Award	2004
ASU President’s Scholarship	2003

Other Campus-Related Activities:

AISES MSU Chapter, Faculty Advisor	2021–Present
Annual MSU Chemistry Fun Run 5k Organizer	2018–Present
Ski Mountaineering Club, Faculty Advisor	2019–2023