

Armin Vahid Mohammadi

Research Assistant Professor

A. J. Drexel Nanomaterials Institute, Drexel University

Ph.D. in Materials Engineering

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Education

- **Auburn University**, Auburn, AL, USA August 2019
Ph.D. in Materials Engineering
- **Florida International University**, Miami, FL, USA August 2015
M.Sc. in Materials Science and Engineering
- **Sharif University of Technology**, Tehran, Iran August 2012
M.Sc. in Materials Science and Engineering
- **Sharif University of Technology**, Tehran, Iran August 2010
B.Sc. in Materials Science and Engineering

Professional and Research Experiences

07/2020 – Present **Research Assistant Professor (Senior Research Associate)**

A. J. Drexel Nanomaterials Institute, Drexel University, Philadelphia, PA, USA

01/2020 – 06/2021 **NSF I-Corps (Technical Lead and Co-PI)**

A. J. Drexel Nanomaterials Institute, Drexel University, Philadelphia, PA, USA

09/2019 – 06/2020 **Postdoctoral Research Associate**

Innovation Partnership Building (TechPark), University of Connecticut, CT, USA

08/2015 – 08/2019 **Doctoral Student and Graduate Research Assistant**

Department of Materials Engineering, Auburn University, Auburn, AL, USA

08/2013 – 08/2015 **Teaching and Research Assistant**

Department of Mechanical and Materials Engineering, Florida International University, Miami, FL, USA

Selected Publications (Full list of publications available at [Google Scholar](#))

1. **A. Vahid Mohammadi**, J. Rosen, and Y. Gogotsi, “[The World of Two-Dimensional Carbides and Nitrides \(MXenes\)](#)”, *Science*, 372, 6547, **2021**.
2. **A. Vahid Mohammadi**, W. Liang, M. Mojtabavi, M. Wanunu, and M. Beidaghi, “[2D Titanium and Vanadium Carbide MXene Heterostructures for Electrochemical Energy Storage](#)”, *Energy Storage Materials*, 41, 554, **2021**.
3. **A. Vahid Mohammadi**, M. Mojtabavi, N. M. Caffrey, M. Wanunu, and M. Beidaghi, “[Assembling 2D MXenes into Highly Stable Pseudocapacitive Electrodes with High Power and Energy Densities](#)”, *Advanced Materials*, 31, 1806931, **2019**. **Featured on the inside back cover of Advanced Materials.*
4. **A. Vahid Mohammadi**, A. Hadjikhani, S. Shahbazmohamadi, and M. Beidaghi, “[2D Vanadium Carbide \(MXene\) as a High-Capacity Cathode Material for Rechargeable Aluminum Batteries](#)”, *ACS Nano*, 11(11), 11135-11144, **2017**.
5. **A. Vahid Mohammadi**, J. Moncada, H. Chen, E. Kayali, J. Orangi, C. A. Carrero, and M. Beidaghi, “[Thick and Freestanding MXene/PANI Pseudocapacitive Electrodes with Ultrahigh Specific Capacitance](#)”, *Journal of Materials Chemistry A*, 6 (44), 22123-22133, **2018**.
6. M. Mojtabavi, **A. Vahid Mohammadi**, K. Ganeshan, D. Hejazi, S. Shahbazmohamadi, S. Kar, A. Van Duin, M. Wanunu, “[Wafer-Scale Lateral Self-Assembly of Mosaic Ti₃C₂T_x MXene Monolayer Films](#)”, *ACS Nano*, 15 (1), 625-636, **2021**.
7. Z. Wang, **A. Vahid Mohammadi**, L. Ouyang, J. Erlandsson, C.W. Tai, L. Wågber, M. M. Hamed, “[Layer-by-Layer Self-Assembled Nanoarchitected Electrodes for Advanced Lithium-Ion Batteries](#)”, *Small*, 2006434, **2020**. **Featured on the front cover of Small.*
8. W. Tian*, **A. Vahid Mohammadi***, Z. Wang, L. Ouyang, M. Beidaghi, and M. M. Hamed, “[Layer-by-Layer Assembly of Pillared MXene Multilayers](#)”, *Nature Communications*, 10 (1), 2558, **2019**. *(*equal contribution)*
9. W. Tian*, **A. Vahid Mohammadi***, M. S. Reid, Z. Wang, L. Ouyang*, J. Erlandsson, T. Pettersson, L. Wågberg, M. Beidaghi, M. M. Hamed, “[Multifunctional Nanocomposites with High Strength and Capacitance Using 2D MXene and 1D Nanocellulose](#)”, *Advanced Materials*, 1902977, **2019**. *(*equal contribution) – *Featured on the front cover of Advanced Materials and highlighted in Nature Review Materials (<https://doi.org/10.1038/s41578-019-0143-y>).*

10. M. Mojtavavi*, **A. VahidMohammadi***, W. Liang, M. Beidaghi, and M. Wanunu, “Single-Molecule Sensing Using Nanopores in Two-Dimensional MXenes Membranes”, *ACS Nano*, 13 (3), 3042–3053, **2019**. (* equal contribution)
11. E. Lee, **A. VahidMohammadi**, B. C. Prorok, Y. S. Yoon, M. Beidaghi, and D. J. Kim, “Room Temperature Gas Sensing of Two-Dimensional Titanium Carbide (MXene)”, *ACS Applied Materials & Interfaces*, 9 (42), 37184-37190, **2017**.
12. W. Tian, Q. Gao, **A. VahidMohammadi**, J. Dang, Z. Li, X. Liang, L. Zhang, and M. M. Hamed, “Liquid-Phase Exfoliation of Layered Biochars into Multifunctional Heteroatom (Fe, N, S) Co-Doped Graphene-like Carbon Nanosheets”, *Chemical Engineering Journal*, 127601, **2020**.
13. B. Sapkota, W. Liang, **A. VahidMohammadi**, R. Karnik, A. Noy, M. Wanunu, “High Permeability Sub-Nanometre Sieve Composite MoS₂ Membranes”, *Nature Communication*, 11 (1), 1-9, **2020**.
14. R. Thakur, **A. VahidMohammadi**, J. Smith, J. Moncada, M. Beidaghi, C. A. Carrero, “Insights into the Genesis of a Selective and Coke Resistant Catalyst for the Dry Reforming of Methane”, *ACS Catalysis*, 10 (9), 5124-5134, **2020**.
15. E. Lee*, **A. VahidMohammadi***, Y. S. Yoon, M. Beidaghi, and D-J Kim, “Two-Dimensional V₂CT_x MXene Gas Sensors with Ultrahigh Sensitivity Toward Non-Polar Gases”, *ACS Sensors*, 4, 1603-1611, **2019**. (*equal contribution)
16. E. Kayali, **A. VahidMohammadi**, J. Orangi, and M. Beidaghi, “Controlling the Dimensions of 2D MXenes for Ultrahigh-Rate Pseudocapacitive Energy Storage”, *ACS Applied Materials & Interfaces*, 10 (31), 25949-25954, **2018**.
17. R. Thakur, **A. VahidMohammadi**, J. Moncada, R. Adams, M. Chi, B. Tatarchuk, M. Beidaghi, C. A. Carrero, “Insights into the Thermal and Chemical Stability of Multilayered V₂CT_x MXene”, *Nanoscale*, 11, 10716-10726, **2019**.
18. R. Thakur, M. Hoffman, **A. VahidMohammadi**, J. Smith, M. Chi, B. Tatarchuk, M. Beidaghi, C. Carrero, “Multilayered Two-Dimensional V₂CT_x MXene for Methane Dehydroaromatization”, *ChemCatChem*, **2020**.
19. **A. VahidMohammadi** and Z. Cheng, “Fundamentals of Synthesis, Sintering Issues, and Chemical Stability of BZCYYb Proton Conducting Electrolyte for SOFCs”, *Journal of The Electrochemical Society*, 162 (8), F803-F811, **2015**.
20. **A. VahidMohammadi** and M. Halali, “Synthesis and characterization of pure metallic titanium nanoparticles by an electromagnetic levitation melting gas condensation method”, *RSC Advances*, 4 (14), 7104-7108, **2014**.

Patents

- M. Beidaghi and **A. VahidMohammadi**, “Electrochemical Systems Comprising MXenes and Max Phase Compositions and Methods of Using the Same”, *US Patent*, US Patent No.: US10756345. (**US Patent**, 10,756,34, **2020**)
- M. Wanunu, M. Mojtavavi, **A. VahidMohammadi**, and M. Beidaghi, “MXene Nanopore Sequencer of Biopolymers”, *US Non-Provisional Patent*, Application No. PCT/US2020/016456, **2021**.

Honors and Awards

- 2019** JEOL USA’s 2019 Grand Prize Winner for Scanning Electron Microscopy (SEM)
 Auburn University’s Outstanding Doctoral Student, 2018-2019 academic year, Auburn University
 Auburn University’s Outstanding International Student, 2018-2019 academic year, Auburn University
 Second Place Winner, 2019 MRS Spring Meeting “Science as Art” competition
 Winner of JEOL USA’s March 2019 Scanning Electron Microscopy (SEM) Image Contest
- 2018** First Place Winner, 2018 MRS Fall Meeting “Science as Art” competition
 Alabama EPSCoR-GRSP Round 13, Research Proposal Funding and PhD Fellowship
 Winner of JEOL USA’s October 2018 Scanning Electron Microscopy (SEM) Image Contest
 Best Poster Award of Materials Engineering, Graduate Engineering Research Showcase, Auburn University
- 2017** JEOL USA’s 2017 Grand Prize Winner for Scanning Electron Microscopy (SEM)
 Best Poster Award of Materials Engineering, Graduate Engineering Research Showcase, Auburn University
 Alabama EPSCoR-GRSP Round 12, Research Proposal Funding and PhD Fellowship
 Winner of JEOL USA’s March 2017 Scanning Electron Microscopy (SEM) Image Contest
- 2016** First Place Winner, 2016 MRS Fall Meeting “Science as Art” international competition
 Alabama EPSCoR-GRSP Round 11, Research Proposal Funding and PhD Fellowship
 Woltosz Departmental Ph.D. Fellowship, Auburn University

Research Highlights and Media Coverage

- **2019 MRS Science as Art Award: MXene Yoda**
 Featured on famous and leading nano website: Nanowerk.com ([Link](#)) | Auburn University coverage ([Link](#)) | Microscopy and Analysis website coverage ([Link](#))

- **2019 Interview with Materials Research Society (MRS) Blog, Materials Connect**
The interview highlights my research and my approach toward artistic representation of scientific results ([Link](#))
- **2018 MRS Science as Art First Place Award**
Auburn University coverage ([Link](#)) | Auburn University 2019 coverage on 2018 MRS and 2017 JEOL USA award ([Link](#))
- **2017 JEOL USA Grand Prize Award for SEM**
JEOL USA's interview and award story coverage ([Link](#))
- **2017 MRS Science in Videos (SciVid) Honorable Award**
Materials Research Society (MRS) story coverage ([Link](#)) | Cambridge.org and MRS Bulletin coverage ([Link](#)) | Link to the winning video on YouTube with more than 2K views ([Link](#))
- **2017 Round 11 Graduate Research Scholars Program (GRSP) Featured Scholars**
Alabama EPSCoR coverage ([Link](#))
- **2016 MRS Science as Art First Place Award**
Inside Science website coverage ([Link](#)) | MRS Materials 360 newsletter ([Link](#)) | Auburn-Opelika news coverage, aonow.com ([Link](#)) | Auburn University coverage ([Link](#)) | Auburn's video coverage on YouTube ([Link](#)) | Issuu.com coverage ([Link](#)) | Freethought blog coverage ([Link](#))