

Farbod Alimohammadi, Ph.D.

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Expertise

● Surface chemistry ● Electrochemistry ● Particle ● Polymer ● Materials Science

**Characterization
Techniques**

● Transmission Electron Microscopy ● Scanning Electron Microscopy ● Atomic Force Microscopy
● X-ray Photoelectron Spectroscopy ● X-ray Diffraction ● Inductively Coupled Plasma ● Raman
Spectroscopy ● Ion Chromatography ● Gas Chromatography

Education

Ph.D. in Chemistry (2015-2020)

Temple University, Philadelphia, PA, USA.

Research Topic: Studies of 2D Layered MnO₂ and MoS₂ for Antibacterial and Electrochemical Applications

Advisor: Professor Daniel Strongin

Graduate Student in Materials Science and Engineering (2014-2015)

Clarkson University, Potsdam NY, USA.

Research Topic: Radical Mediated Thiol-ene/yne Dispersion Polymerizations

Advisor: Professor Devon A. Shipp

M.Sc. in Textile Engineering, Textile Chemistry & Fiber Science (2007-2010)

Islamic Azad University, Tehran South Branch, Tehran, Iran.

B.Sc. in Textile Engineering, Textile Chemistry & Fiber Science (2002-2007)

Islamic Azad University, Shahr-E-Rey Branch, Tehran, Iran.

Employment History

Postdoctoral researcher at Drexel University, Department of Materials Science and Engineering, Dr. Pomerantseva's Lab, Research on Energy Storage and Conversion, 2021-Present.

Full-time, Head of Polymer Chemistry Laboratory, Imen HezarCham Industries, Developed Traffic Paints and Adhesives, 2008-2014.

Teaching Experience

Fall 2015 and 2016 General Chemistry Lab I Instructor

Spring 2016 and 2017 General Chemistry Lab II Instructor

Honors and Awards

Recipient of the highly competitive "Daniel Swern Fellowship Award for Outstanding Research", Chemistry Department, Temple University (2020)

Recipient of the highly competitive "Doctoral Dissertation Completion Grant", Chemistry Department, Temple University (2020)

Recipient of the "Shabahang Scholarship" (Scholarship supporting Iranian scholars), Scoring First Rank (2020)

Early Career Investigator Board and Early Career Network representative, Energy Frontier Research Centers, Center for Complex Materials from First Principles (CCM), funded by the U.S. Department of Energy.

Respected Member of Young Researcher and Elites Club of Islamic Azad University, South-Tehran Branch (2013)

Certificate of Appreciation from Young Researchers Club (Excellent member of Brilliant Talent of Young Researchers and Elites Club) (2013)

Scoring First Rank in Nationwide M.Sc. Entrance Examination, Iran (2007)

Google Scholar

Citations 1390

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Patents

F. Alimohammadi, M. Parvinzadeh, A. Shamei, "Carbon nanotube embedded textiles", US 2011, 0171413.

A. Shamei, M. Parvinzadeh, F. Alimohammadi, "Water-repellent cellulose fiber using polycarboxylic acid/hydrophobic silica nanocomposite coating", US 2011, 0287245.

Publications

1. K. Atmatzidis, F. Alimohammadi, N. Aich, R. Tehrani, Nano-enhanced Dialytic Fluid Purification: CFD Modeling of Pb(II) Removal by Manganese Oxide, ACS Omega **2020**, 5, 32697-32705.

2. K. Atmatzidis, F. Alimohammadi, D.R. Strongin, R.A. Tehrani, Biomimetic System for the Application of Nanomaterials in Fluid Purification: Removal of Arsenic with Ferrihydrite, *ACS Omega* **2020**, 5, 5873-5880.
3. F. Alimohammadi, M. Sharifian Gh., N. Attanayake, A. Thenuwara, Y. Gogotsi, B. Anasori, D. R. Strongin, Antimicrobial Properties of 2D MnO₂ and MoS₂ Nanomaterials Vertically Aligned on Graphene Materials and Ti₃C₂ MXene, *Langmuir* **2018**, 34, 7192-7200.
4. F. Alimohammadi, M. Parvinezadeh Gashti, A. Mozaffari, Polyvinylpyrrolidone/Carbon Nanotube/Cotton Functional Nanocomposite: Preparation and Characterization of Properties, *Fibers and Polymers* **2018**, 19, 1940-1947.
5. Y. Sun, F. Alimohammadi, D. Zhang, G. Guo, Enabling Colloidal Synthesis of Edge-Oriented MoS₂ with Expanded Interlayer Spacing for Enhanced HER Catalysis, *Nano Letter* **2017**, 17 (3), 1963-1969.
6. K.D. Rasamani, F. Alimohammadi, Y. Sun, Interlayer-expanded MoS₂, *Materials Today* **2017**, 20, 83-91.
7. F. Alimohammadi, Chen Wang, Olivia Z. Durham, Hannah R. Norton, Christopher N. Bowman, Devon A. Shipp, Radical Mediated Thiol-Ene/Yne Dispersion Polymerizations, *Polymer* **2016**, 105, 180-186.
8. M. Montazer, A. Mozaffari, F. Alimohammadi, Simultaneous Dyeing and Antibacterial Finishing of Nylon Fabric Using Acid Dyes and Colloidal Nanosilver, *Fibers & Textiles in Eastern Europe* **2015**, 23(2), 100-106.
9. M. Forati-Nezhad, G. Mir Mohamad Sadeghi, F. Yaghmaie, F. Alimohammadi, Affecting the Morphology of Silver Deposition on Carbon Nanotube Surface: From Nanoparticles to Dendritic (tree-like) Nanostructures, *Materials Science and Engineering: C* **2015**, 46, 232-238.
10. M. Montazer, A. Shamei, F. Alimohammadi, Synthesis of Nano Silver on Polyamide Fabric using Silver/Ammonia Complex, *Materials Science and Engineering C* **2014**, 38, 170-176.
11. F. Alimohammadi, M. Parvinezadeh Gashti, A. Shamei, Functional Cellulose Fibers via Polycarboxylic Acid/Carbon Nanotube Composite Coating, *Journal of Coatings Technology and Research* **2013**, 10, 123-132.
12. M. Montazer, A. Shamei, F. Alimohammadi, Synthesizing and Stabilizing Silver Nanoparticles on Polyamide Fabric using Silver-Ammonia/PVP/UVC, *Progress in Organic Coatings* **2012**, 75, 379-385.
13. M. Montazer, A. Shamei, F. Alimohammadi, Stabilized Nanosilver Loaded Nylon Knitted Fabric using BTCA Without Yellowing, *Progress in Organic Coatings* **2012**, 74, 270-276.
14. F. Alimohammadi, M. Parvinezadeh Gashti, A. Shamei, A. Kiumarsi, Deposition of Silver Nanoparticles on Carbon Nanotube by Chemical Reduction Method: Evaluation of Surface, Thermal and Optical Properties, *Superlattices and Microstructures* **2012**, 52, 50-62.
15. F. Alimohammadi, M. Parvinezadeh Gashti, A. Shamei, A Novel Method for Coating of Carbon Nanotube on Cellulose Fiber using 1,2,3,4-butanetetracarboxylic Acid as a Cross-linking Agent, *Progress in Organic Coatings* **2012**, 74, 470-478.
16. M. Parvinezadeh Gashti, F. Alimohammadi, A. Shamei, Preparation of Water-repellent Cellulose Fibers using a Polycarboxylic Acid/Hydrophobic Silica Nanocomposite Coating, *Surface & Coatings Technology* **2012**, 206, 3208-3215.
17. M. Montazer, F. Alimohammadi, A. Shamei, M. K. Rahimi, Durable Antibacterial and Cross-linking Cotton with Colloidal Silver Nanoparticles and Butane Tetracarboxylic Acid Without Yellowing, *Colloids and Surfaces B: Biointerfaces* **2012**, 89, 196-202.
18. M. Montazer, F. Alimohammadi, A. Shamei, M. K. Rahimi, In Situ Synthesis of Nano Silver on Cotton using Tollens' Reagent, *Carbohydrate Polymers* **2012**, 87, 1706-1712.
19. F. Alimohammadi, M. Montazer, M.K. Rahimi, A. Shamei, Synthesis of Silver Nanoparticles with Poly Vinyl-2-pyrrolidone and study Their stability on the Cotton Fabric Against Washing, *Iranian Journal of Polymer Science and Technology* **2012**, 25, 265-275.

20. F. Alimohammadi, A. Shamei, Investigating the Applications of Thermochromic and Photochromic Materials on the Textile Industries, Iranian Monthly Textile Magazine **2008**, 10, 53-62.

Book Chapters

M. Parvinzadeh Gashti, E Pakdel, F. Alimohammadi. Nanotechnology-based Coating Techniques for Smart Textiles. Editor: Jinlian Hu, Active Coatings for Smart Textiles, Woodhead Publishing, 2016; pp 243-268.

M. Parvinzadeh Gashti, F. Alimohammadi, A. Kiumarsi, G. Cordova, B. Yasie Lee, Z. Leonenko, W. Nogala, Z. Xu, A. Wax, W. J. Eldridge. Nanocomposite Materials, Synthesis, Properties and Applications. Edited by P. Jyotishkumar, H. Nishar, K. Thomas, Y. Yingfeng. Microscopy of Nanomaterials, Taylor and Francis, 2016; pp 105-128.

M. Parvinzadeh Gashti, F. Alimohammadi, J. Hulliger, M. Burgener, H. Oulevey-Aboulfadl, G. L. Bowlin. Microscopic Methods to Study the Structure of Scaffolds in Bone Tissue Engineering: a Brief Review. Editor: A. Méndez-Vilas, Current Microscopy Contributions to Advances in Science and Technology, Vol. 1, Spain, Formatex Research Center, 2012; pp 625-638.

M. Parvinzadeh Gashti, F. Alimohammadi, G. Song, A. Kiumarsi. Characterization of Nanocomposite Coatings on Textiles: a Brief Review on Microscopic Technology. Editor: A. Méndez-Vilas, Current Microscopy Contributions to Advances in Science and Technology, Vol. 2, Spain, Formatex Research Center. 2012; pp 1424-1437.

Presentations

F. Alimohammadi, D. Strongin, B. Van Ake, R. Tehrani, Oral Presentation at the 8th Sustainable Nanotechnology Organization Conference, Biological Functions of Vertically Aligned 2D Nanomaterials and Engineered solutions to Mitigate their Environmental Impact, platform talk 2019.

R. Tehrani, F. Alimohammadi, B. Van Ake, D. Strongin, Will 2D Nanomaterials be the New Security Threat in the Next Decade, EPA-Homeland Security 2019 International Conference, platform talk 2019.

S. Laki, A. A. Shamsabadi, F. Alimohammadi, B. Anasori, M. Soroush, Room-Temperature Synthesis of Carboxylated-Mxene Nanosheets for Mercury Scavenging, AIChE Annual Meeting 2019.

S. Laki, A. A. Shamsabadi, F. Alimohammadi, B. Anasori, M. Soroush, High Vying Ti C T Mxene Nanosheets with Mehpa to Release Mercury from a Loaded Oil Phase, AIChE Annual Meeting 2019.

S. Laki, A. A. Shamsabadi, F. Alimohammadi, B. Anasori, M. Soroush, Sustainable, Efficient, and Robust Mxene-Based Emulsion Liquid Membranes for Heavy Metals Removal, AIChE Annual Meeting 2019.

F. Alimohammadi, M. Sharifian Gh., N. Attanayake, A. Thenuwara, Y. Gogotsi, B. Anasori, D. R. Strongin, MnO₂ and MoS₂ Nano-Knives Exhibit Antibacterial Properties, 256th American Chemical Society National Meeting & Exposition, Boston, MA, USA, August 19-23, 2018.

E.B. Cerkez, A. Bruefach, F. Alimohammadi, A.M. Valentine, D.R. Strongin, Photochemistry of Ferrihydrite in the Protein Cage of Ferritin for Chromate Reduction, Goldschmidt Abstracts, 2018, 355.

F. Alimohammadi, "Antimicrobial Mode-of-Action of 2D Nanomaterials", the Center for Complex Materials from First Principles (CCM), April 6, 2018.

F. Alimohammadi, M. Sharifian Gh., N. Attanayake, A. Thenuwara, Y. Gogotsi, B. Anasori, D. R. Strongin, Antimicrobial Mode-of-Action of 2D Nanomaterials ACS Younger Chemists Committee Poster Session, Temple University, Philadelphia, PA, USA, April 10, 2018.

E. Ovalle, M. Richard, F. Alimohammadi, E. Cerkez, T. Marshall, D. Strongin, E. Borguet, Synthesis of Molybdenum Disulfide and Gold Nanoparticle Hybrids for Photocatalytic Degradation of Organic Dyes, ACS Younger Chemists Committee Poster Session, Temple University, Philadelphia, PA, USA, April 10, 2018.

M. Richard, F. Alimohammadi, M. Sharifian Gh., T. Marshall, E. Cerkez, H.-L. Dai, D. R. Strongin, E. Borguet, Photo-Synthesis of Ag/MoS₂ Interlayer Expanded Hybrid Nanomaterials for Catalytic and Antibacterial Applications, ACS Younger Chemists Committee Poster Session, Temple University, Philadelphia, PA, USA, April 10, 2018.

M. Richard, F. Alimohammadi, P. Yasini, "1T monolayer, Interlayer Expanded and (Photo)catalytic Applications: A MoS₂ story", the Center for Complex Materials from First Principles (CCM) January 26, 2018.

F. Alimohammadi, D. Shipp, Polymer Particles Prepared by Radical Thiol–Ene Dispersion Polymerization, The Annual CAMP Technical Meeting, The New York State Center for Advanced Materials Processing, Clarkson University May 2015.

F. Alimohammadi, D. Shipp, Polymer Particles Prepared by Radical Thiol–Ene Dispersion Polymerization, 6th Annual Undergraduate and Graduate Chemistry and Biology Research Symposium (ACS), March 28, 2015, SUNY Potsdam (Poster Presentation).

M. Forati-Nezhad, G. Mir Mohamad Sadeghi, F. Alimohammadi, A. Rahimi, Evaluation of Silver Crystals Synthesized on the Carbon Nanotubes Surface at the Presence of Different Solvents, The 8th International Chemical Engineering Congress & Exhibition (IChEC 2014), February 2014.

F. Alimohammadi, M. Montazer, A. Shamei, Synthesis of Silver Nanoparticles by Poly Vinylpyrrolidone and Applying on the Cotton Fabric, 11th Nanotechnology Iranian Student Conference 2011.

A. Shamei, F. Alimohammadi, Investigating the Minimal Inhibitorial Concentration of Silver Nanoparticles, Second Chemistry Conference of Azad University, Rasht branch, 2011.