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Postdoctoral Associate
Chemical & Environmental Engineering
Yale University
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EDUCATION

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| Yale University
Postdoctoral Research Associate
Co-Advised by: Professors Chinedum Osuji and Menachem Elimelech | New Haven, CT
(Present) |
| Drexel University
Ph.D. Chemical Engineering
Dissertation "Oxidative and Initiated Chemical Vapor Deposition of Polymer Electronic Materials for Applications in Energy Conversion and Storage"
Advised by: Professor Kenneth K. S. Lau | Philadelphia, PA
(March 2013) |
| Sharif University of Technology
M.Sc. Biotechnology
Thesis "Enzymatic Removal of Phenol from Synthetic Effluent"
Advised by: Professor Iran Alemzadeh | Tehran, Iran
(May 2007) |
| Sharif University of Technology
B.Sc. Chemical Engineering
Thesis "Plant Design and Techno-economic Analysis of a Caffeine Extraction Process from Camellia Sinensis Waste"
Advised by: Professor Akhtar Kazemi | Tehran, Iran
(September 2004) |

AWARDS AND HONORS

- Recipient of Star Mentorship Award (Drexel University, 2012)
- Recipient of Mollye and Mitchell Glick Scholarship (Drexel University, 2012)
- Recipient of Hess Family Fellowship (Drexel University, 2011)
- Recipient of Mollye and Mitchell Glick Scholarship (Drexel University, 2010)
- Recipient of Mollye and Mitchell Glick Scholarship (Drexel University, 2009)
- Dean Graduate Student Fellowship (Drexel University, 2007)

PUBLICATIONS (Chronologically sorted in reverse order) **h-index 10**

25. Feng, X.; **Nejati, S.**; Tousley, M. E.; Cowan, M. G.; Wiesenauer, B. R.; Noble, R. D., Elimelech, M.; Gin, D. L. and Osuji, C. O. "Thin Polymer Films with Continuous Vertically Aligned 1-nm Pores: Towards Ideal Nanoporous Membranes" *ACS Nano* 2016, 10(1), 150-158.
24. Doubek, G.; Sekol R. C.; Li, J.; Ryu, W.; Gittleson, F.; **Nejati, S.**; Carmo, M.; Linardi, Bordeenithikasem, P.; Kinser, E.; Liu, Y.; Mukherjee, S.; Osuji, C. O.; Schroers, J. and Taylor A. D. "Guided Evolution of Bulk Metallic Glass Nanostructures: A Platform for Designing Three-Dimensional Electrocatalytic Surfaces" 2015 *Advanced Materials* 2016, 28(10), 1940-1949. **(Inside cover page)**
23. **Nejati, S.**; Boo, C.; Osuji, C. O. and Elimelech, M. "Engineering Flat Sheet Microporous PVDF film for Membrane Distillation" *Journal of Membrane Science* 2015 492, 353-363.
22. **Nejati, S.**; Patel, A; Wallowitch G. R. and Lau, K. K. S. "Electrical Conductivity and Stability of oCVD Copolymer Thin Films of Thiophene and Pyrrole" *Nanoscience and Nanotechnology letters* 2015 7 (1), 50-55.
21. Lu, X. ✨; **Nejati, S.** ✨; Choo, Y.; Osuji, C. O. and Elimelech, M. "Elements Provides a Clue: Nanoscale Characterization of Thin-Film Composite Polyamide Membranes" *Applied Materials and Interfaces* 2015

20. Spurgeon, S. R.; Balachandran, P. V.; Kepaptsoglou, D. M.; Damodaran, A. D.; Karthik, A.; **Nejati, S.**; Jones, L.; Ambaye, H.; Lauter, V.; Ramasse, M. Q.; Lau, K. K. S.; Martin, L. W.; Rondinelli, J. M. and Taheri, M. L. "Polarization Screening-Induced Magnetic Phase Gradients at Complex Oxide Interfaces" *Nature Communications* 2015 6 (6735)
19. Perreault, F.; de Faria, A. F.; **Nejati, S.** and Elimelech, M. "Antimicrobial Properties of Graphene Oxide Nanosheets: Why Size Matters" *ACS Nano* 2015 9 (7), 7226–7236.
18. Kaufman, G.; **Nejati, S.**; Boltyanskiy, R.; Dufresne, E. and Osuji, C. O. "Soft Microcapsules with Highly Plastic Shells Formed by Interfacial Polyelectrolyte-Nanoparticle Complexation" *Soft Matter* 2015 (**Front cover page**)
17. Smolin, Y. Y.; **Nejati, S.** ✨; Bavarian, M.; Lau, K. K.S.; Lee, D. and Soroush M. "Effects of Polymer Chemistry on Polymer-Electrolyte Dye Sensitized Solar Cell Performance" *Journal of Power Sources* 2015 274, 156-164.
16. **Nejati, S.**; Minford, T.; Smolin, Y. Y. and Lau, K. K. S. "Enhanced Charge Storage of Ultrathin Polythiophene Films within Porous Nanostructures" *ACS Nano* 2014 8 (6), 5413–5422.
15. Azoz, S.; Marquez, A.; Exarhos, A.; Gilbertson, L. P.; **Nejati, S.**; Cha, J. C.; Zimmerman, J. B.; Kikkawa, J. and Pfefferle, L. D. "Highly Conductive Single-Walled Carbon Nanotube Thin Film Preparation by Direct Alignment on Substrates from Water Dispersions" *Langmuir* 2015 31 (3), 1155–1163.
14. Xiaokai, L.; Jing-Shun, H.; **Nejati, S.**; Guard, L. G.; Osuji, O. C.; Hazari, N. and Taylor, A. D. "Role of HF in Oxygen Removal from Carbon Nanotubes: Implications for High Performance Carbon Electronics" *Nano letters* 2014 14 (11), 6179-6184.
13. Lin, S.; **Nejati, S.**; Boo, C.; Hu, Y.; Osuji, C. O. and Elimelech, M. "Omniphobic Membrane for Robust Membrane Distillation" *Environmental Science and Technology* 2014 1 (11), 443-447.
12. Kaufman, G.; Boltyanskiy, R.; **Nejati, S.**; Dufresne, E. and Osuji, C. O. "Single-Step Microfluidic Fabrication of Soft Polyelectrolyte Microcapsules by Interfacial Complexation." *Lab on a chip* 2014 14, 3494-3497.
11. Feng, X.; Tousley, M. E.; Cowan, M. G.; Wiesenauer, B. R.; **Nejati, S.**; Choo, Y.; Noble, R. D., Elimelech, M.; Gin, D. L. and Osuji, C. O. "Scalable Fabrication of Polymer Membranes with Vertically Aligned 1-nm Pores by Magnetic Field Directed Self-Assembly" *ACS Nano* 2014, 8 (12), 11977–11986.
10. Spurgeon, S. R.; Sloppy, J. D.; Winkler, C. R.; Jablonski, M.; **Nejati, S.**; Jambunathan, K.; Damodaran, A. R.; Idrobo, J. C.; Lau, K. K. S.; Lofland, E.; Martin, L. W.; and Taheri, M. L. "Substrate-Controlled Strain and Polarization Effects on Magnetization and Curie Temperature in LSMO / PZT Thin Film Oxide Heterostructures" *ACS Nano* 2014 8 (1), 894-903.
9. Ben-Sasson, M.; Lu, X.; Bar-Zeev, E.; Zodrow, K. R.; **Nejati, S.**; Qi, G., Giannelis E.P. and Elimelech, M. "In situ Formation of Silver Nanoparticles on Thin-Film Composite for Biofouling Mitigation" *Water Research* 2014 62, 260-270.
8. Bavarian, M.; **Nejati, S.**; Lau, K. K. S.; Lee, D. and Soroush M. "Effects of Critical Dye Sensitized Solar Cell Parameters on Cell Performance: a Theoretical Study" *Industrial and Engineering Chemistry Research* 2013 53 (13), 5234-5247.
7. Bose, R.; **Nejati, S.** ✨; Stuffle, D. and Lau, K. K. S. "Grafted Poly(ethylene oxide) (PEO) Anti-fouling Surfaces using Initiated Chemical Vapor Deposition (iCVD)", *Macromolecules* 2012 45 (17), 6915–6922.
6. **Nejati, S.** and Lau, K. K. S. "In Situ Synthesis and Integration of Polymer Electrolyte in Nanostructured Electrodes for Photovoltaic Applications" *MRS proceedings* 2011 1312, 115-118.
5. **Nejati, S.** and Lau, K. K. S. "Pore Filling of Nanostructured Electrodes in Dye Sensitized Solar Cells by Initiated Chemical Vapor Deposition" *Nano letters* 2011 11 (2), 419–423.
4. **Nejati, S.** and Lau, K. K. S. "Chemical Vapor Deposition Synthesis of Tunable Unsubstituted Polythiophene" *Langmuir* 2011 27 (24), 15223-15229.
3. **Nejati, S.** and Lau, K. K. S. "Integration of Polymer Electrolytes in Dye Sensitized Solar Cells by Initiated Chemical Vapor Deposition" *Thin Solid Film* 2011 519 (14), 4151-4155.
2. Alemzadeh, I. ✨ and **Nejati, S.** ✨ "Phenols Removal by Immobilized Horseradish Peroxidase" *Journal of Hazardous Materials* 2010 166(2), 1082-1086.

1. Afsahi, B.; Kazemi, A.; Kheirloomoom, A. and **Nejati, S.** “Immobilization of Cellulase on Non-Porous Ultrafine Silica Particles” *Scientica Iranica* 2007 14 (4), 379-383.

Under Review

1. Ojha, K.; Debnath, T.; Maity, P.; Makkar, M.; **Nejati, S.**; Ramanujachary, K.; Chowdury, P.; Ghosh, H and Ganguli, A. “Exiton Separation in CdS supraparticles Upon Conjugation with Graphene Sheet” 2016
2. Ben-Sasson, M.; Lu, X.; **Nejati, S.**; Jaramillo, H. and Elimelech, M. “In situ Surface Functionalization of Reverse Osmosis Membranes with Biocidal Copper Nanoparticles” 2016

 Indicates major contribution

CONFERENCE PRESENTATIONS

- S. Nejati, T. E. Minford, Y. Y. Smoling and K. K. S. Lau “Ultra-Thin Polythiophene within Nanostructured Electrode with Enhanced Charge Storage Capacity” AICHE, National meeting, **2014**.
- S. Nejati, C. Boo, C. O. Osuji and M. Elimelech “Highly Hydrophobic Polyvinylidene Fluoride (PVDF) Membrane for Direct Contact Membrane Distillation through Diffusion Induced Phase Inversion” AICHE, National meeting, **2014**. (Poster)
- S. Nejati and K. K. S. Lau “CVD-Fabricated Organic Active Layer and Hole Transport Material for Organic-Inorganic Mesoscopic Solar Cell” AICHE, National meeting, **2014**.
- S. Nejati, C. Tran, T. E. Minford, V. Kalra and K. K. S. Lau “Enhanced Electrochemical Supercapacitors Integrated with Polythiophene Using Oxidative Chemical Vapor Deposition” ECS, Joint International meeting, **2012**. (Poster)
- S. Nejati and K.K.S. Lau “Integration of Polymer Electrolytes in Nanostructure Electrode of the Dye Sensitized Solar Cell” ECS, Joint International meeting, **2012**.
- S. Nejati and K. K. S. Lau “oCVD Conjugated Polymers with Exceptional Charge Storage Capacity” New York Academy of Science, **2012**.
- S. Nejati, S. Sussilo, and K. K. S. Lau “Polymer Electrolyte Integrated Dye Sensitized Solar Cell” Chemical Heritage Foundation **2010**. (Poster, First Place)
- S. Nejati and K.K.S. Lau “Integration of Polymer Electrolytes in Nanostructure Electrode of the Dye Sensitized Solar Cell” ECS, **2010**.
- S. Nejati and K.K.S. Lau “In Situ Synthesis and Integration of Polymer Electrolytes in Nanostructured Electrodes for Photovoltaic Applications” MRS, Boston Meeting, **2010**.
- S. Nejati and K. K. S. Lau “Integration of iCVD Polymer Electrolytes in Quasi Solid State Dye Sensitized Solar Cells” AICHE National meeting, **2009**.

INVITED LECTURES

- S. Nejati “Polymeric Porous Materials and Polymerization within Porous Media: Design, Synthesis, and Applications” *University of Nebraska-Lincoln* **2015**
- S. Nejati “Oxidative and initiated chemical vapor deposition for conformal and clean polymer coatings” *University of Oklahoma* **2015**
- S. Nejati and K. K. S. Lau “Polymeric Interfaces for Energy Storage and Conversion Devices” *Rowan University* **2011**

TEACHING EXPERIENCE & MENTORSHIP

TEACHING (2007-2015)

Chemical Engineering Laboratories

(Transport Phenomena, Reaction Engineering, and Dynamic) Instructed students in executing the experiments and collecting proper data

(Separation and Fermentation) Helped with designing the experiments and grading the exams

Transport Phenomena-

Held office hour and recitations, graded homework

Chemical Engineering Thermodynamics-

Held office hour and recitations, graded homework

MENTORSHIP (2009-2014)

Gilad Kaufman (PhD student, Yale University, CT 2014), Student at Yale University

Design of Delivery Vehicle for Controlled Release

Dylan Levings (Undergraduate student, Yale University, CT 2014), Deepwater Wind LLC

CFD Modeling of a Hollow Fiber Membrane Distillation Module

Noah Watson (STAR program, Drexel University, PA 2012), Student at Drexel University

Photoanode Electrode Materials for a Dye Sensitized Solar Cell (Program Award)

Devin Cody (Germantown Academy, PA 2010-2012), Undergraduate student, Yale University

Engineering Light Absorption in a Dye Sensitized Solar Cell

Arpit Patel (Undergraduate student, Drexel University, PA 2011-2012), Process engineer at Afton Chemical

oCVD Copolymerization of Thiophene and Pyrrole

Danielle Martine (Undergraduate student, Drexel University, PA 2012), Process engineer at Air Products

Titanium Dioxide Nanotube Fabrication

Laura Wu (Undergraduate student, Drexel University, PA 2012), Process engineer at International Flavors

& Fragrances Inc

Titanium Dioxide Nanotube Fabrication

Jahnavi Deshmukh (Undergraduate student, Drexel University, PA 2012), Business Technology Analyst at

Deloitte

iCVD Polyethylene Oxide within Porous Titania Electrode

Chelse Prejean (Undergraduate student, Drexel University, PA 2012), Global Process Safety Leader at

Hexion

Titania Nanotube-Based Solar Cell

Thomas Minford (Undergraduate student, Drexel University, PA 2012), Project Engineer at Environex

Supercapacitor Fabrication

Gregory Wallowitch (Undergraduate student, Drexel University, PA 2012), Process Control Engineer at

Johnson Matthew

oCVD Synthesis of Polypyrrole

Ian Oach (Germantown Academy, PA 2009), Graduate student at Princeton University

Quasi Solid State Dye Sensitized Solar Cell Fabrication

Thomas Clandaniel (Undergraduate student, Drexel University, PA 2009), Technical Service Engineer at

Clariant

Dye Sensitized Solar Cell Characterization

RESEARCH EXPERIENCE**YALE UNIVERSITY**

(PROF. ELIMELECH'S AND PROF. OSUJI'S GROUPS)

- Membrane development for Pressure Retarded Osmosis (PRO)
- Evaluating the effect of order-disorder transition of the ion conducting block copolymer on its ionic conductivity
- Investigated the solvent dependency of flash precipitation process for fabricating hydrophobic polymeric nanospheres with tunable size
- Membrane development and fabrication for Membrane Distillation (MD) process
- Membrane design and cost analysis for a High Pressure Reverse Osmosis (HPRO) process
- Electrodeposition of hydrous oxide (MnO_x) on bulk metallic glass pillars (in collaboration with Professor Andre Taylor)
- Investigated chemical effect of Urea treatment on SWNT and the possibility of SWNT crosslinking through disulfide and diamine bonding using small linkers (in collaboration with Professor Lisa Pfefferle)

DREXEL UNIVERSITY*(PROF. LAU'S GROUP)*

- Grant proposal: Contributed to NSF proposal writing. (Funded) (CBET-1264487)
- Grant proposal: Initiated a collaborative effort and contributed to writing and data-gathering for NSF proposal. (Funded) (CBET-1236180)
- Devised a new approach for polymer integration within mesoporous nanostructured electrodes and integrated functional polymeric materials within nanostructured matrices for energy conversion and storage applications
- Developed oxidative chemical vapor deposition (oCVD) of conjugated polymers and pioneered CVD synthesis of conducting polymers using chlorinated metalloids oxidant
- Design and fabrication of all organic supercapacitors
- Investigated possible effect of mixing layer on magnetization and Curie Temperature in LSMO/PZT thin film (< 10 nm) oxide heterostructures (in collaboration with Professor Mitra Taheri)

SHARIF UNIVERSITY OF TECHNOLOGY*(PROF. ALEMZADEH'S GROUP)*

- Immobilization of Horseradish peroxidase and the assessment of its catalytic activity in phenol oxidation.

PROFESSIONAL CAREER AND MEMBERSHIPS

- Reviewer for Journal of Carbon, Vacuum Science and Technology: B, Journal of Applied Polymer Science, Polymers, Nanoscale
- Senior Member of American Institute of Chemical Engineering (AIChE) 2015
- Member of American Association for the Advancement of Science (AAAS) 2008
- Member of American Chemical Society (ACS) 2008
- Member of Electrochemical Society (ECS) 2010-2013

EXTRACURRICULAR ACTIVITY & SERVICE

- Managed and maintained the Auger/X-ray photoelectron spectroscopy lab at the Centralized Research Facility, Drexel University (CRF) (Jan-May 2013)
- Board Member, Chemical and Biological Engineering Graduate Student Association (CBE GSA) (Fall-Winter 2011)
- Faculty tenure and promotion committee (Student Division), member 2011