

Jonathan P. Singer

Rutgers University, Department of Mechanical & Aerospace Engineering
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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA

- **PhD Materials Science and Engineering, June 2013**
 - Advisor: Edwin L. Thomas
 - Thesis: *Hybrid Direct Write Lithographic Strategies for Complex Hierarchical Structures*

UNIVERSITY OF PENNSYLVANIA, Philadelphia, PA

- **MS Materials Science and Engineering, August 2008**
 - Advisor: John E. Fischer
 - Thesis: *Determination of the Phase Behavior of the Li-B-N-H System through In Situ X-Ray Analysis*
- **BS Materials Science and Engineering, *summa cum laude*, May 2008**

PROFESSIONAL EXPERIENCE

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY, Piscataway, NJ

Associate Professor, Mechanical & Aerospace Engineering July 2021-Present

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY, Piscataway, NJ

Assistant Professor, Mechanical & Aerospace Engineering September 2015-June 2021

YALE UNIVERSITY, New Haven, CT

Postdoctoral Associate, Laboratory of Professor C. O. Osuji June 2013-June 2015

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA

Research Assistant, Laboratory of Professor E. L. Thomas September 2008-June 2013

UNIVERSITY OF PENNSYLVANIA, Philadelphia, PA

Research Assistant, Laboratory of Professor J. E. Fischer January 2005-August 2008

GENERAL MOTORS CORPORATION, Warren, MI

Research Intern, Laboratory of Dr. F. E. Pinkerton May-August 2007

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, Gaithersburg, MD

Undergraduate Researcher, Laboratory of Dr. T. Yildirim June-August 2006

AWARDS & HONORS

- 2021 Presidential Fellowship for Teaching Excellence Award
- 2021 Office of Naval Research Young Investigator Award
- 2020 Rutgers Provost's Award for Excellence in Innovative Teaching
- 2019 Rutgers Engineering Governing Council Students' Professor of the Year, Mechanical and Aerospace Engineering
- 2018 3M Non-Tenured Faculty Award
- 2014 Yale Scientific Teaching Fellow
- 2012 NSF Travel Award for ASME Student Poster Symposium
- 2012 Semifinalist in MIT 100K Accelerate Contest with Team Voltaphon

- 2011 Silver Graduate Student Award at Materials Research Society's Fall Meeting
- 2011 3rd Prize in MIT MADMEC alternative energy contest with Team Voltaphon
- 2011 Lockheed Martin Prize (2nd Place) in the MIT Soldier Design Competition with Team Altenera
- 2011 2nd place prize in the MIT PPST Polymer Poster Contest
- 2011 Sigma Xi inductee
- 2010 Judges Award for Best Poster at COMSOL Boston Conference
- 2009 National Science Foundation Graduate Research Fellowship Program Honorable Mention
- 2008 National Defense Science and Engineering Graduate Fellowship
- 2008 Penn Prize for Excellence in Teaching by Graduate Students
- 2008 R. M. Brick Award, UPenn Department of Materials Science and Engineering
- 2008 Faculty Appreciation Award, UPenn School of Engineering and Applied Science
- 2004-2008 UPenn University Scholar
- 2006 Barry M. Goldwater Scholarship

PEER-REVIEWED PUBLICATIONS

1. Ma, T.; Liu, A.; Nitzsche, M. P.; Jin, Y.; Buznitsky, K.; Sridhar, A; Fakhraai, Z.; **Singer, J. P.**; *Thin film rheology via focused laser spike thermocapillary dewetting*, Early Career Materials Researcher Research Letter at MRS Communications, 2022, <https://doi.org/10.1557/s43579-022-00270-w>.
2. Hasan, M.; Patel, Y.; Gamboa, A. R.; Grzenda, M. J.; Saro-Cortes, V.; Mhatre, V.; **Singer, J. P.**; *Shear-Induced Macropore-Infused Nanocomposite Epoxy Thermosets (MINET)*, Advanced Materials Interfaces, 9, 23, 2200145, 2022.
3. Grzenda, M. J.; **Singer, J. P.**; *Thermal Properties of Graphite Nanoplatelet-Epoxy Composites Formed through Scalable High Shear Exfoliation of Expanded Graphite*, Journal of Micro- and Nano-manufacturing, 10, 1, 014501, 2022.
4. Jeong, M.; Kudchodkar, S. B.; Gil, A.; Jeon, B.; Park, G. H.; Cho, Y.; Lee, H.; Cheong, M. S.; Kim, W.; Hwang, Y.-H.; Lee, J.-A.; Lim, H.; Kim, M. Y.; Lallow, E. O.; Brahmabhatt, T.; Kania, S. A.; Jhumur, N. C.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; **Singer, J. P.**; Lin, H.; Spiegel, E. K.; Pessaint, L.; Porto, M.; Nase, D.; Vanry, A.; Kar, S.; Elyard, H. A.; Tietjen, I.; Cassel, J.; Salvino, J. M.; Montaner, L. J.; Park, Y. K.; Muthumani, K.; Roberts, C. C.; Maslow, J. N.; *Immune responses of a novel bi-cistrionic SARS-CoV-2 DNA vaccine following intradermal immunization with suction delivery*, Frontiers in Virology – Antivirals and Vaccines, 2, 2022.
5. Green-Warren, R. A.; Bontoux, L.; McAllister, N. M.; Kovacevich, D. A.; Shaikh, A.; Kuznetsova, C.; Tenorio, M.; Lei, L.; Pelegri, A. A.; **Singer, J. P.**; *Determining the Self-Limiting Electro spray Deposition Compositional Limits for Mechanically Tunable Polymer Composites*, ACS Applied Polymer Materials, 4, 5, 3511-3519, 2022.
6. Grzenda, M. J.; Maia, M.; Costeas, A.; Ferri, P.; Diez, F. J.; **Singer, J. P.**; *Low-Density Electronics Coatings for Air-to-Deep Sea Vehicles*, Journal of Coatings Technology and Research, 1-12, 2022.
7. Nachtigal, C. J.; Li, Y.; Zhang, L.; Lei, L.; Losego, M. D.; **Singer, J. P.**; *Atomic Layer Deposition Reinforcement of Methylcellulose Nanowire Forests*, Advanced Engineering Materials, 2101485, 2022.
8. Lallow, E. O.; Jhumur, N. C.; Ahmed, I.; Kudchodkar, S. B; Roberts, C. C.; Jeong, M.; Muthumani, K.; Melnik, J. M.; Park, S. H.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; **Singer, J. P.**; Park, Y. K.; Maslow, J. N.; Lin, H.; *A Novel, Suction-Based Intradermal DNA Vaccine Delivery Platform Induces Immunogenicity to SARS-CoV-2 in Rats*, Science Advances, 7, eabj0611, 2021.

9. Kovacevich, D. A.; Ma, T.; Nitzsche, M. P.; Saro-Cortes, V.; Gamboa, A. R.; Davis, E. D.; **Singer, J. P.**; *Thermocapillary Dewetting-Based Dynamic Spatial Light Modulator*, Optics Letters, 46, 3721-3724, 2021.
10. Liu, N.; Ma, T.; Liao, C.; Ojeda Mota, R. M.; Liu, J.; Sohn, S.; Kube, S.; Zhao, S.; **Singer, J. P.**; Schroers, J.; *Combinatorial Measurement of Critical Cooling Rates in Aluminum-base Metallic Glass Forming Alloys*, Scientific Reports, 11, 3903, 2021.
11. Lei, L.; Gamboa, A. R.; Kuznetsova, C.; Littlecreek, S.; Wang, J.; Zahn, J. D.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition on Polymer Masks*, Scientific Reports, 10, 17290, 2020.
12. Lei, L.; Chen, S.; Nachtigal, C. J.; Moy, T. F.; Yong, X.; **Singer, J. P.**; *Homogeneous Gelation Leads to Nanowire Forests in the Transition Between Electrospray and Electrospinning*, Materials Horizons, 7, 2643-2650, 2020.
13. Li, T.; Zou, Q.; Ma, T.; **Singer, J. P.**; Su, C.; *Adaptive Simultaneous Topography and Broadband Nanomechanical Mapping of Heterogeneous Materials on Atomic Force Microscope*, IEEE Transactions on Nanotechnology, 19, 689-698, 2020.
14. Kovacevich, D. A.; Lei, L.; Han, D.; Kuznetsova, C.; Lee, H.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition for the Surface Modification of Additively Manufactured Parts*, ACS Applied Materials & Interfaces, 12, 20901-20911, 2020.
15. Ma, T.; Nitzsche, M. P.; Gamboa, A. R.; Saro-Cortes, V.; **Singer, J. P.**; *Localized Physical Vapor Deposition via Focused Laser Spike Dewetting of Gold Thin Films*, ACS Applied Nano Materials, 2, 1, 586-597, 2019.
16. Klein, L. C.; Kallontzi, S.; Fabris, L.; Jitianu, A.; Ryan, C.; Aparicio, M.; Lei, L.; **Singer, J. P.**; *Applications of Melting Gels*, Journal of Sol-Gel Science and Technology, 89, 66-77, 2019.
17. Li, R.; Chen, Z.; Datye, A.; Simon, G. H.; Ketkaew, J.; Kinser, E.; Liu, Z.; Zhou, C.; Dagdeviren, O. E.; **Singer, J. P.**; Osuji, C. O.; Schroers, J.; Schwarz, U. D.; *Atomic Imprinting of Metallic Glasses*, Communications Physics 1, 1, 75, 2018.
18. Hasan, M.; Shajahan, I.; Gopinadhan, M.; Ketkaew, J.; Anesgart, A.; Cho, C.; Chopra, S.; Higgins, M.; Reyes, S.; Schroers, J.; Osuji, C. O.; **Singer, J. P.**; *3D Compatible Sacrificial Nanoimprint Lithography for Tuning the Wettability of Thermoplastic Materials*, Invited Manuscript for Journal of Micro- and Nano-Manufacturing, 6, 4, 041003, 2018.
19. Gamboa, A. R.; Nitzsche, M. P.; Saro-Cortes, V.; Ma, T.; Lei, L.; **Singer, J. P.**; *Thermocapillary Multidewetting of Thin Films*, MRS Advances, 3, 18, 977-982, 2018.
20. Lei, L.; Kovacevich, D. A.; Ryu, J.; Nitzsche, M. P.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Thickness-Limited Electrospray Deposition for 3D Coatings*, ACS Applied Materials & Interfaces, 10, 13, 11175-11188, 2018.
21. Bordeenithikasem, P.; Liu, J.; Kube, S. A.; Li, Y.; Ma, T.; Scanley, B. E.; Broadbridge, C. C.; Vlassak, J. J.; **Singer, J. P.**; Schroers, J.; *Determination of Critical Cooling Rates in Metallic Glass Forming Alloy Libraries through Laser Spike Annealing*, Scientific Reports, 7, 7155, 2017.
22. **Singer, J. P.**; *Thermocapillary Approaches to the Deliberate Patterning of Polymers*, Invited Review for Journal of Polymer Science B: Physics, 55, 1649-1668, 2017.
23. **Singer, J. P.**; Kooi, S. E.; Thomas, E. L.; *Focused Laser-Induced Marangoni Dewetting for Patterning Polymer Thin Films*, Journal of Polymer Science B: Physics, 54, 2, 225-236, 2016.
24. **Singer, J. P.**; Pelligra, C. I.; Kornblum, N.; Gopinadhan, M.; Ketkaew, J.; Liew, S. F.; Cao, H.; Schroers, J.; Osuji, C. O.; *Multiscale Patterning of a Metallic Glass using Sacrificial Imprint Lithography*, Microsystems & Nanoengineering 1, 15040, 2015. (Feature Article)
25. Squires, A. M.; Akbar, S.; Tousley, M. E.; Rokhlenko, Y.; **Singer, J. P.**; Osuji, C. O.; *Experimental Evidence for Proposed Transformation Pathway from the Inverse Hexagonal to Inverse Diamond*

- Cubic Phase from Oriented Lipid Samples*, Langmuir, 31, 28, 7707-7711, 2015.
26. **Singer, J. P.**; Gopinadhan, M.; Shao, Z.; Taylor, A. D.; Schroers, J.; Osuji, C. O.; *High-Resolution Nanoimprint of Functional Polymers with Bulk Metallic Glass Molds*, ACS Applied Materials & Interfaces, 7, 6, 3456-3461, 2015.
 27. Shao, Z.; **Singer, J. P.**; Liu, Z.; Liu, Y.; Li, H.; Osuji, C. O.; Schroers, J.; *Shear Accelerated Crystallization in a Supercooled Atomic Liquid*, Physical Review E, 91, 020301, 2015.
 28. Hu, H.; **Singer, J. P.**; Osuji, C. O.; *Morphology Development in Thin Films of a Lamellar Block Copolymer Deposited by Electrospray*, Macromolecules, 47, 16, 5703-5710, 2014.
 29. Pelligra, C. I.; Huang S.; **Singer, J. P.**; Mayo, A.; Mu, R. R.; Osuji, C. O.; *High-Fidelity Solvothermal Growth of Arrayed ZnO Nanorods with Controlled Diameter and Spacing Using Block Copolymer Templates*, Small, 10, 21, 4304-4309, 2014.
 30. **Singer, J. P.**; Gotrik, K. W.; Lee, J.-H.; Kooi, S. E.; Ross, C. A.; Thomas, E. L.; *Alignment and Reordering of a Block Copolymer by Solvent-Enhanced Thermal Laser Direct Write*, Polymer, 55, 7, 1875-1882, 2014.
 31. Lee, J.-H.; Koh, C. Y.; **Singer, J. P.**; Jeon, S.-J.; Maldovan, M.; Stein, O.; Thomas, E. L.; *25th Anniversary Article: Ordered Polymer Structures for the Engineering of Photons and Phonons*, Advanced Materials, 26, 4, 532-569, 2014.
 32. **Singer, J. P.**; Lin, P.-T.; Kooi, S. E.; Kimerling, L. A.; Jurgen, M.; Thomas, E. L.; *Direct-Write Dewetting of Polymer Thin Films by a Laser-Induced Thermal Gradient*, Advanced Materials, 25, 42, 6100-6105, 2013.
 33. Lee, J.-H.; Veysset, D.; **Singer, J. P.**; Retsch, M.; Saini, G.; Pezeril, T.; Nelson, K. A.; Thomas, E. L.; *Dynamical Responses of Layered Nanostructure Composites at High Strain Rate Deformation*, Nature Communications, 3, 1164, 2012.
 34. Lee, J.-H.; **Singer, J. P.**; Thomas, E. L.; *Micro-/Nanostructured Mechanical Metamaterials*, Advanced Materials, 24, 36, 4782-4810, 2012.
 35. **Singer, J. P.**; Lee, J.-H.; Kooi, S. E.; Thomas, E. L.; *Rapid Fabrication of 3D Terahertz Split Ring Resonator Arrays by Novel Single-Shot Direct Write Focused Proximity Field Nanopatterning*, Optics Express, 20, 10, 11097-11108, 2012.
 36. **Singer, J. P.**; Kooi, S. E.; Thomas, E. L.; *Focused Laser Spike (FLaSk) Annealing of Photoactivated Chemically Amplified Resists for Rapid Hierarchical Patterning*, Nanoscale, 3,7, 2730-2738, 2011.
 37. Zhang, G.; **Singer, J. P.**; Kooi, S. E.; Evans, R. E.; Thomas, E. L.; Fraser, C. L.; *Reversible Solid-State Mechanochromic Fluorescence from a Boron Lipid Dye*, Journal of Materials Chemistry, 21, 23, 8295-8299, 2011.
 38. **Singer, J. P.**; Meyer, M. S.; Speer Jr., R. M.; Fischer, J. E.; Pinkerton, F. E.; *Determination of the Phase Behavior of $(\text{LiNH}_2)_c(\text{LiBH}_4)_{1-c}$ Quaternary Hydrides through in Situ X-ray Diffraction*, Journal of Physical Chemistry C, 113, 43, 18927-18934, 2009.
 39. Osswald, S.; Portet, C.; Gogotsi, Y.; Laudisio, G.; **Singer, J. P.**; Fischer, J. E.; Sokolov, V.V.; Kukushkina, J. A.; Kravchik, A. E.; *Porosity Control in Nanoporous Carbide-Derived Carbon by Oxidation in Air and Carbon Dioxide*, Journal of Solid State Chemistry, 182, 7, 1733-1741, 2009.
 40. Yeon, S. H.; Osswald, S.; Gogotsi, Y.; **Singer, J. P.**; Simmons, J. M.; Fischer, J. E.; Lillo-Rodenas, M. A.; Linares-Solano, A.; *Enhanced Methane Storage of Chemically and Physically Activated Carbide-Derived Carbon*, Journal of Power Sources, 191, 2, 15, 560-567, 2009.
 41. Kim, H. S.; **Singer, J. P.**; Gogotsi, Y.; Fischer, J. E.; *Molybdenum Carbide-Derived Carbon for Hydrogen Storage*, Microporous and Mesoporous Materials, 120, 3, 267-271, 2009.

42. **Singer, J. P.**; Mayergoyz, A.; Portet, C.; Schneider, E.; Gogotsi, Y.; Fischer, J. E.; *Enhanced Volumetric Hydrogen Storage Capacity of Porous Carbon Powders by Forming Peels or Pellets*, *Microporous and Mesoporous Materials*, 116, 469-472, 2008.
43. Dash, R. K.; Chmiola, J.; Yushin, G.; Gogotsi, Y.; Laudisio, G.; **Singer, J. P.**; Fischer, J. E.; Kucheyev, S.; *Titanium Carbide Derived Nanoporous Carbon for Energy-Related Applications*, *Carbon*, 44, 12, 2489-2497, 2006.
44. Laudisio, G.; Dash, R. K.; **Singer, J. P.**; Yushin, G.; Gogotsi, Y.; Fischer, J. E.; *Carbide-Derived Carbons: A Comparative Study of Porosity Based on Small-Angle Scattering and Adsorption Isotherms*, *Langmuir*, 22, 21, 8945-8950, 2006.

CONFERENCE PROCEEDINGS

1. Nachtigal, C. J.; Grzenda, M. J.; **Singer, J. P.**; *In-air Polymerization and Crosslinking of Monomers during Electrospray Deposition*, TMS 2022 Annual Meeting & Exposition, Conference Proceedings, Anaheim, CA, Feb. 2022, *Accepted*.
2. Grzenda, M.; Gamboa, A.; Mercado, J.; Lei, L.; Guzman, J.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Parametric Control of Melting Gel Morphology and Chemistry via Electrospray Deposition*, ASME 2021 16th International Manufacturing Science and Engineering Conference, Virtual, Jun. 2021.
3. Li, T.; Zou, Q.; **Singer, J. P.**; Su, C.; *Adaptive Simultaneous Topography and Broadband Nanomechanical Mapping of Heterogeneous Materials on Atomic Force Microscope*, 2019 Annual American Control Conference, Philadelphia, PA, 3129-3134, Jul. 2019.
4. Ma, T.; Guzman-Pichardo, J.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Focused Laser Spike (FLaSk) Thermocapillary Patterning of Micro/Nanostructures*, SPIE Photonics West 2019, San Francisco, CA, 10905, 1090514, Feb. 2019.

MANUSCRIPTS IN SUBMISSION & PREPRINTS

1. Blisko, J. M.; Grzenda, M. J.; Vladimirovsky, R. M.; Shuck, C. E.; **Singer, J. P.**; Yong, X.; *Controlling Morphology in Electrosprayed Methylcellulose Nanowires via Nanoparticle Addition: Coarse-Grained Modeling and Experiments*, *in Review*.
2. Tousley, M. E.; Dyer, A. M.; Grzenda, M. J.; Kovacevich, D. A.; **Singer, J. P.**; *Virtual Research Group Modules: Scalable Simulations of STEM Research*, ChemRxiv, 2022, <https://doi.org/10.26434/chemrxiv-2022-lj2k0>.
3. Park, S. H.; Lei, L.; D'Souza, D.; Liu, A.; Lallow, E. O.; Zipkin, R.; DiMartini, E.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; Lin, H.; Maslow, J. N.; **Singer, J. P.**; *Efficient Electrospray Deposition of Surfaces Smaller Than the Spray Plume*, ChemRxiv, 2022, <https://doi.org/10.26434/chemrxiv-2022-wtb5r>.
4. Ma, T.; Dsouza, D.; Ryerson, K. M.; Signorelli, M.; Zhao, Y.; Liu, L.; Loewenberg, M.; Osuji, C. O.; **Singer, J. P.**; *Switchable Electrohydrodynamic Capillary Bridges*, ChemRxiv, 2020, <https://doi.org/10.26434/chemrxiv.13360394.v1>.

PATENTS & APPLICATIONS

1. U.S. Patent No. 16/050,297, APPARATUS AND METHOD FOR DEWETTING-BASED SPATIAL LIGHT MODULATION FOR HIGH-POWER LASERS, Issued Jan. 5, 2021 (T. Ma, **J. P. Singer**).
2. U.S. Patent No. 10,074,544, DEVELOPER FREE POSITIVE TONE LITHOGRAPHY BY THERMAL DIRECT WRITE, Issued September 11, 2018 (**J. P. Singer**; P.-T. Lin; E. L. Thomas).
3. U.S. Patent 8,465,910, HYBRID LITHOGRAPHIC METHOD FOR FABRICATING COMPLEX MULTIDIMENSIONAL STRUCTURES, Issued Jun. 18, 2013 (**J. P. Singer**; J.-H. Lee; S. E. Kooi);

- E. L. Thomas).
4. International Patent Application No. PCT/US2021/030513, SYSTEM AND METHOD TO USE SUCTION TO ENHANCE PERMEABILIZATION AND TRANSFECTION OF CELLS, Filed May 3, 2021 (H. Lin, **J. P. Singer**, D. I. Shreiber, J. W. Shan, J. D. Zahn, E. O. Lallow, J. M. Melnik, N. C. Jhumur).
 5. International Patent Application No. PCT/US20/35905, SACRIFICIAL NANOTRANSFER LITHOGRAPHY FOR THE METALIZATION OF PLASTICS, Filed Jun. 3, 2020 (**J. P. Singer**).
 6. International Patent Application No. PCT/US20/33020, METHODS AND DEVICES FOR THICKNESS-LIMITED ELECTROSPRAY ADDITIVE MANUFACTURING, Filed May 15, 2020 (H. Lee, **J. P. Singer**).
 7. International Patent Application No. PCT/US20/24963, POROUS EPOXY NANOCOMPOSITE MONOLITHS, Filed Mar. 26, 2020 (M. Hasan, **J. P. Singer**).
 8. International Patent Application No. PCT/US19/36776, THICKNESS-LIMITED ELECTROSPRAY DEPOSITION, Filed Jun. 12, 2019 (L. Lei, **J. P. Singer**).

RESEARCH SUPPORT (External Total \$6.8M, PI Total \$3.5M, Lab Share \$3.4M)

- **Office of Naval Research**, *Microporous Nanocomposite Multifunctional Carbon Fiber Composites*, PI, \$509K, 2021-2024.
- **Boeing**, Surface Modification Project (Subject to NDA), PI, \$134K, 2021-2022.
- **Northrop Grumman**, Materials Project (Subject to NDA), PI (Co-PI: A. Pelegri, A. Norris), \$135K (JPS \$120K), 2021-2022.
- **GeneOne Life Science**, *Self-Limiting Electro spray Deposition of Bioactive Device Coatings*, PI, \$607K, 2019-2023.
- **National Aeronautics and Space Administration**, *Staticapionics: Targeted Electrostatic Deposition of Water and Nutrients on Plant Roots*, PI (Co-I: A. J. Both, D. Specca), \$225K (\$170K JPS), 2020-2022.
- **National Science Foundation**, *Collaborative Research: Multi-Scale Micromechanical Properties of Hierarchical Coatings and Interfaces Fabricated by Self-Limiting Electro spray Deposition*, PI (Co-PI: A. Pelegri, Other PI: J.-H. Lee, University of Massachusetts–Amherst), \$702K, (\$397K Rutgers; \$346K JPS), 2020-2023.
- **Rutgers Institute for Materials Research**, *Creating Testbeds for the Next Generation of Auto-Adaptive Responsive Materials*, Co-PI (PI: Assimina Pelegri, Co-PIs: H. Lee, R. Malhotra, D. Metaxas, S. Tomassone, Rutgers University), \$50K (\$7.5K JPS), 2020-2021.
- **National Science Foundation**, *Collaborative Research: Electro spray Deposition of 'Melting Gels' for Multifunctional Coatings*, PI (Other PI: A. Jitianu, Lehman College), \$494K (\$252K JPS), 2019-2022.
- **Rutgers Office of Research and Economic Development**, *Liquid Membranes for Filtration of Aerosols and Airborne Particulates*, Co-PI (PI: G. Drazer, Co-PIs: H. Lin, E. DeMauro), \$50K (\$10K JPS), 2020-2021.
- **Rutgers Center for COVID-19 Response and Pandemic Preparedness**, *Transdermal Delivery of DNA Vaccine for SARS-CoV-2*, Co-PI (PI: Hao Lin, Co-PIs: B. Parekkadan, J. Shan, D. Shreiber, J. Zahn), \$45K (\$5K JPS), 2020-2021.
- **Rutgers Office of Research and Economic Development**, *Chamber for Self-Limiting Electro spray Deposition Post-Processing*, PI, \$10K, 2019-2020.
- **Office of Naval Research**, *Operational Advancements for Multirotor Unmanned Aerial/Underwater Vehicles*, Senior Staff (PIs J. Diez (Rutgers), M. Contarino (SubUAS LLC.)), \$2M (Rutgers \$1.12M;

JPS \$225K), 2018-2021.

- **U.S. Department of Energy**, *High Efficiency Waste Heat Harvesting Using Novel Thermal Oscillators*, Co-PI (PI: C. Osuji, University of Pennsylvania, Co-PIs: M. Loewenberg, M. Zhong, Yale University), \$1.2M (\$295K Rutgers/JPS), 2018-2021.
- **Northrop Grumman**, Acoustics Project (Subject to NDA), PI (Co-PI: A. Pelegri, A. Norris), \$175K (JPS \$95K), 2019-2020.
- **3M Company**, Non-Tenured Faculty Award, \$45K, 2018-2020.
- **Espace, Inc.**, *Scalable Ionic-Liquid Thruster Array Fabrication*, PI, \$665K, 2016-2020.
- **NJ Space Grant Consortium**, *Scaling and Flipping a Simulations Course for Mechanical and Aerospace Engineering*, PI, \$5K, 2018.
- **NJ Space Grant Consortium**, *Virtual Research Group Module Pilot Program*, PI, \$5K, 2017.
- **Rutgers Institute for Advanced Materials, Devices and Nanotechnology**, *Motorized Stage Add-On to Filmetrics F40 Microreflectometry System*, PI, \$7K, 2016-2017.

INVITED TALKS & SEMINARS

1. **Singer, J. P.**; *Self-Limiting Electrospray Deposition Post-Processing with Functional Materials*, TMS 2022 Annual Meeting & Exposition, Anaheim, CA, Feb. 28, 2022.
2. **Singer, J. P.**; *Scalable Flipping of a Simulations Course Based on ANSYS*, Ansys Simulation World (Virtual), Apr. 21, 2021.
3. **Singer, J. P.**; *Hybrid Micro/Nanomanufacturing of Functional Materials*, Material Science & Engineering Seminar Series, West Virginia University (virtual), Mar. 19, 2021.
4. **Singer, J. P.**; *Self-Limiting Electrospray Deposition to Create Bioactive Coatings*, 3M Tech Forum, 3M Company (virtual), Dec. 16, 2020.
5. **Singer, J. P.**; *Self-Limiting Electrospray Deposition of Functional and Protective Coatings on 3D Objects*, ACS National Meeting and Expo 2020 (virtual), Aug. 17, 2020.
6. **Singer, J. P.**; *Hybrid Micro/Nanomanufacturing of Functional Materials through Forming and Spray Processing*, Department of Materials Science and Engineering, Texas A&M, College Station, TX, Scheduled Apr. 10, 2020, Postponed due to COVID-19.
7. **Singer, J. P.**; *Hybrid Micro/Nanomanufacturing of Functional Materials through Forming and Spray Processing*, Department of Materials and Nanoengineering, Rice University, Houston, TX, Scheduled Apr. 9, 2020, Postponed due to COVID-19.
8. **Singer, J. P.**; *Micro/Nanomanufacturing of 3D Functional Coatings via Self-Limiting Electrospray Deposition*, Manufacturing Interest Group Seminar, University of Illinois-Urbana Champaign, Champaign, IL, Scheduled Mar. 12, 2020, Postponed due to COVID-19.
9. **Singer, J. P.**; *Charge Manipulation and Self Assembly in Self-Limiting Electrospray Deposition to Create Bioactive Coatings*, 13th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jun. 19, 2020.
10. **Singer, J. P.**; *Micro/Nanomanufacturing of Functional Coatings via Self-Limiting Electrospray Deposition*, Department of Mechanical Engineering and Applied Mechanics, University of Pennsylvania, Philadelphia, PA, Nov. 26, 2019.
11. **Singer, J. P.**; *Hybrid Micro/Nanomanufacturing of Functional Materials*, Department of Materials Science and Engineering, Drexel University, Philadelphia, PA, Oct. 30, 2019.
12. **Singer, J. P.**; *Micro/Nanomanufacturing of Functional Coatings via Self-Limiting Electrospray Deposition*, Aris and Bessie Barbikas Phillip Lecture in Mechanics and Materials, Department of Mechanical Engineering and Materials Science, Yale University, New Haven, CT, Oct. 9, 2019.
13. Prendergast, L.; Kerrigan, J.; **Singer, J. P.**; *Active Learning Strategies*, 6th Annual Northeast

- Mechanical Engineering Chairs Summit, Rutgers University, Piscataway, NJ, Aug. 8, 2019.
14. **Singer, J. P.;** *Hybrid Micro/Nanomanufacturing of Functional Materials*, Sandia National Laboratory, Albuquerque, NM, Apr. 26, 2019
 15. **Singer, J. P.;** *Focused Laser Spike (FLaSk) Thermocapillary Patterning of Micro/Nanostructures*, SPIE Photonics West 2019, San Francisco, CA, Feb. 6, 2019
 16. **Singer, J. P.;** *Thermocapillary and Electrostatic Manipulation of Soft Matter for Micro/Nanomanufacturing*, Technion Institute of Technology Department of Chemical Engineering Seminar Series, Haifa, Israel, Dec. 19, 2018.
 17. **Singer, J. P.;** *Self-Assembly in Extreme Fields Mediated by Mobility*, Bar Ilan University Chemistry Seminar Series, Bar Ilan, Israel, Dec. 18, 2018.
 18. **Singer, J. P.;** *Thermocapillary and Electrostatic Manipulation of Soft Matter for Micro/Nanomanufacturing*, SUNY-Binghamton University, Binghamton, NY, Oct. 24, 2018.
 19. **Singer, J. P.;** *Self-Assembly in Extreme Fields Mediated by Mobility*, CUNY-Lehman College, New York, NY, Sep. 26, 2018.
 20. **Singer, J. P.;** *Micro/Nanomanufacturing of Functional Coatings via Self-Limiting Electrospray Deposition*, Naval Research Laboratory, Washington, DC, Aug. 8, 2018.
 21. **Singer, J. P.;** *Hybrid Micro/Nanomanufacturing of Functional Materials through Multiscale Spray and Imprint*, 3M Tech Forum, St. Paul, MN, Jun. 13, 2018.
 22. **Singer, J. P.;** *Engaging Students in Real (and Virtual) Micro/Nanomanufacturing Research*, Malcom G. McLaren Memorial Lecture Symposium, Rutgers University, Piscataway, NJ, Apr. 13, 2018.
 23. **Singer, J. P.;** *Focused Laser Spike (FLaSk) Thermocapillary Patterning and Metrology of Soft Matter*, University of Pennsylvania Polymer Seminar Series, Philadelphia, PA, Feb. 16, 2018.
 24. **Singer, J. P.;** *Thermocapillary and Electrostatic Manipulation of Soft Matter for Micro/Nanomanufacturing*, City College of New York Mechanical Engineering Seminar Series, New York, NY, Feb. 1, 2018.
 25. **Singer, J. P.;** *Thermocapillary and Electrostatic Manipulation of Soft Matter for Micro/Nanomanufacturing*, Air Force Research Laboratory Soft Matter Seminar Series, Dayton, OH, Sep. 1, 2017.
 26. **Singer, J. P.;** *Scalable Micro/Nanomanufacturing for Complex Architectures through Hybrid Lithography*, Rutgers University Materials Science and Engineering Seminar Series, Piscataway, NJ, Oct. 8, 2016.
 27. **Singer, J. P.;** *Scalable Micro/Nanomanufacturing for Complex Architectures through Hybrid Lithography*, New Jersey Institute of Technology Mechanical and Industrial Engineering Seminar Series, Newark, NJ, Sep. 28, 2016.
 28. **Singer, J. P.;** *Multiscale Patterning of Metallic Glasses through Sacrificial ZnO Templates*, Yale Institute for Nanoscience and Quantum Engineering Seminar Series, New Haven, CT, Oct. 31, 2014.

CONTRIBUTED TALKS & POSTERS

1. **Pejman, S. R.;** Bapatla, S.; Dadi, K.; Llumiquinga, B.; Specca, D. R.; Both, A.J.; **Singer, J.P.;** *Staticaponics: Targeted Electrostatic Deposition of Water and Nutrients on Plant Roots for Space Missions*, ASME International Mechanical Engineering Congress and Exposition 2022, Nov. 3, 2022.
2. **McAllister, N. M.;** Arkhipov, M.; Green-Warren, R. A.; Lee, J.-H.; Pelegri, A. A.; **Singer, J. P.;** *Non-Destructive Measurement of Optically Scattering Polymer Films Using Image Processing*, ASME International Mechanical Engineering Conference and Exhibition 2022, Poster, Columbus, OH, Nov. 2, 2022.

3. Patel, Y.; Mohanty, R.; Nicholas, C.; **Singer, J. P.**; *Macropore-Infused Nanocomposite Emulsion Thermosets for Multifunctional Carbon Fiber Composites*, ASME International Mechanical Engineering Congress & Exposition 2022, Columbus OH, Nov. 1, 2022.
4. Xu, Y.; **Singer, J. P.**; Sills, R.; *Coarse-grained Molecular Modeling of Microporous Nanocomposite Emulsion Thermosets*, The 10th International Conference on Multiscale Materials Modeling, Baltimore, MD, Oct. 3, 2022.
5. Park, S.; Grzenda, M. J.; Green-Warren, R.; Abd Al-Jaleel, Z.; Lei, L.; Atzampou, M.; Zahn, J.; Lin, H.; Maslow, J; **Singer, J.P.**; *Bioactive Self-Limiting Electrospray for Efficient Additive Manufacturing*, Gordon Research Conference on Additive Manufacturing of Soft Materials, Poster, Ventura, CA, Aug. 10-11, 2022.
6. **Singer, J. P.**; *Bioactive Self-Limiting Electrospray for Efficient Additive Manufacturing*, MRS Spring Meeting 2022, Honolulu, HI, May 11, 2022.
7. Park, S. H.; Lei, L.; Nachtigal, C. J.; Lallow, E.; Atzampou, M.; Liu, A.; Zahn, J.; Lin, H.; **Singer, J. P.**; *Electrospray Deposition as an Efficient alternative to Coat Medical Devices*, APS March Meeting 2022, Chicago, IL, Mar. 18, 2022.
8. Nachtigal, C. J.; Grzenda, M. J.; **Singer, J. P.**; *In-air Polymerization and Cross-linking of Monomers during Electrospray Deposition*, APS March Meeting 2022, Chicago, IL, Mar. 16, 2022.
9. Park, S. H.; Liu, A.; Nachtigal, C. J.; Lei, L.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition to Produce Bioactive Coatings*, 16th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jan. 14, 2022.
10. Nachtigal, C. J.; Grzenda, M. J.; **Singer, J. P.**; *In-air Polymerization and Cross-linking of Monomers during Electrospray Deposition*, 15th Northeast Complex Fluids and Soft Matter Workshop (virtual), Aug. 20, 2021.
11. Pejman, R.; Llumiquinga, B.; Wang, F.; **Singer, J. P.**; *Staticaponics: Targeted Electrostatic Deposition of Water and Nutrients on Plant Roots*, 15th Northeast Complex Fluids and Soft Matter Workshop (virtual), Aug. 20, 2021.
12. Nicholas, C. O.; Patel, Y.; **Singer, J. P.**; *Carbon Fiber Composites Reinforced with Microporous Nanocomposite Emulsion Thermosets*, 15th Northeast Complex Fluids and Soft Matter Workshop (virtual), Aug. 20, 2021.
13. McAllister, N. M.; Green-Warren, R. A.; Lee, J.-H.; Pelegri, A. A.; **Singer, J. P.**; *Digital Image Processing for the Analysis of Spray Coated Porous Films*, 15th Northeast Complex Fluids and Soft Matter Workshop (virtual), Aug. 20, 2021.
14. Lallow, E. O.; Jhumur, N. C.; Ahmed, I.; Kudchodkar, S. B.; Roberts, C. C.; Jeong, M.; Muthumani, K.; Park, S. H.; Melnik, J. M.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; **Singer, J. P.**; Park, Y.; Maslow, J. N.; Lin, H.; *A novel, suction-based intradermal DNA vaccine delivery platform induces immunogenicity to SARS-CoV-2 in vivo*, XVth International Nidovirus Symposium (virtual), June 7-8, 2021.
15. Lallow, E. O.; Jhumur, N. C.; Ahmed, I.; Kudchodkar, S. B.; Roberts, C. C.; Jeong, M.; Park, S. H.; Melnik, J. M.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; **Singer, J. P.**; Park, Y.; Maslow, J. N.; Lin, H.; *A Novel, Suction-based Transdermal DNA Vaccine Delivery Platform Induces Immunogenicity To SARS-CoV-2 In Rats*, 24th Annual Meeting for the American Society of Gene & Cell Therapy, Portland, Oregon, May 12-15, 2021.
16. Lallow, E. O.; Jhumur, N. C.; Ahmed, I.; Kudchodkar, S. B.; Roberts, C. C.; Jeong, M.; Park, S. H.; Melnik, J. M.; Shan, J. W.; Zahn, J. D.; Shreiber, D. I.; **Singer, J. P.**; Park, Y.; Maslow, J. N.; Lin, H.; *A Novel, Suction-based Mechanism for Intradermal DNA Delivery In Vivo*, 47th Annual Northeast Biomedical Engineering Conference (virtual), Mar. 23-25, 2021.

17. Park, S. H.; Lei, L.; Lallow, E.; Nachtigal, C. J.; Lin, J.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition to Create Bioactive Coatings*, APS March Meeting 2021 (virtual), Mar. 16, 2021.
18. Ma, T.; Dsouza, D.; Ryerson, K. M.; Signorelli, M.; Zhao, Y.; Osuji, C.; **Singer, J. P.** *Electrohydrodynamic Thermal Oscillators for Waste Heat Harvesting Applications*, APS March Meeting 2021 (virtual), Mar. 16, 2021.
19. Park, S. H.; Nachtigal, C. J.; Lei, L.; **Singer, J. P.**; *SLED Optimization of DNA Solutions*, Johnson & Johnson Engineering Showcase (virtual), Feb. 23, 2021.
20. Patel, Y.; **Singer, J. P.**; *Structural Characterization of Microporous Nanoparticle Emulsion Thermosets*, 14th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jan. 15, 2021.
21. Park, S. H.; Nachtigal, C. J.; Lei, L.; **Singer, J. P.**; *SLED Optimization of DNA Solutions*, 14th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jan. 15, 2021.
22. Llumiquinga, B.; **Singer, J. P.**; *Electrospraying Water with a Modified Nozzle*, 14th Northeast Complex Fluids and Soft Matter Workshop, Virtual, Jan. 15, 2021.
23. **Singer, J. P.**; *Self-Limiting Electrospray Deposition to Create Bioactive Coatings*, MRS Fall Meeting 2020 (virtual), Dec. 1, 2020.
24. Nachtigal, C. J.; Kovacevich, D. A.; Lei, L.; **Singer, J. P.** *Finite Element Method Modeling of Self-Limiting Electrospray Deposition*, ASME IMECE Meeting 2020 (virtual), Nov. 18, 2020.
25. Dsouza, D.; Ma, T.; Ryerson, K. M.; Signorelli, M.; Zhong, M.; Loewenberg, M.; Osuji, C.; **Singer, J. P.**; *Electrohydrodynamic Thermal Oscillators for Waste Heat Harvesting Applications*, Poster, ASME IMECE Meeting 2020 (virtual), Nov. 18, 2020.
26. Dyer, A.; Hughes, K.; Tousley, M. E.; **Singer, J.P.** *Transition of Virtual Research Group Modules to a Remote Teaching Environment*, ASME IMECE 2020 (virtual), Nov 16, 2020.
27. Lei, L.; Chen, S.; Nachtigal, C.; Moy, T.; Yong, Xin.; **Singer, J. P.**; *Nanowire Forests Deposited via Homogeneous Gelation in Electrospray Deposition*, ASME IMECE Meeting 2020 (virtual), Nov. 16, 2020.
28. Patel, Y.; **Singer, J. P.**; *Phase Field Interface Modelling of Phase Separation for Microporous Structure Fabrication*, Poster, COMSOL Conference 2020 North America (virtual), Oct. 7, 2020.
29. Nachtigal, C. J.; Kovacevich, D. A.; Lei, L.; **Singer, J. P.** *COMSOL Modeling of Self-Limiting Electrospray Deposition*, COMSOL Conference North America (virtual), Oct. 8, 2020.
30. Gamboa, A. R.; Lei, L.; Mercado, J.; Guzman, J.; Klein, L.C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Multifunctional Melting Gel Coatings via Electrospray Deposition*, 13th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jun. 19, 2020.
31. Ma, T.; Buznitsky, K.; Nitzsche, M.; Yi, J.; Sridhar, A.; Chacko, D.; Fakhraai, Z.; **Singer, J. P.**; *Focused Laser Spike Thermocapillary Dewetting for Metrology of Glassy Thin Films*, 13th Northeast Complex Fluids and Soft Matter Workshop, Virtual, Jun. 19, 2020.
32. Dsouza, D.; Ma, T.; Ryerson, K. M.; Signorelli, M.; **Singer, J. P.**; *Electrohydrodynamic Thermal Oscillators for Waste Heat Harvesting Applications*, 13th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jun. 19, 2020.
33. Nachtigal, C. J.; Lei, L.; **Singer J. P.** *Electrospray Deposition of Plasmonic Nanoparticles and Other Methylcellulose Blends*. 13th Northeast Complex Fluids and Soft Matter Workshop (virtual), Jun. 19, 2020.
34. Lei, L.; Nachtigal, C.; Chen, S.; Moy, T.; Yong, X.; **Singer, J. P.** *Electrospray Deposition of Nanowire Forests Through Spinodal Gelation*, ACS Spring Meeting 2020 (virtual), Mar. 22-25, 2020.
35. Gamboa, A. R.; Lei, L.; Mercado, J.; Guzman, J.; Klein, L.C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Multifunctional Melting Gel Coatings via Electrospray Deposition*, APS

- March Meeting 2020 (virtual), Mar. 5, 2020.
36. Ma, T.; Dsouza, D.; Ryerson, K. M.; Signorelli, M.; Zhao, Y.; Osuji, C.; **Singer, J. P.** *Liquid Selection for Electrohydrodynamic Capillary Thermal Switches*, APS March Meeting 2020 (virtual), Mar. 5, 2020.
 37. **Singer, J. P.**; Kovacevich, D. A.; Lei, L.; Han, D.; Kuznetsova, C.; Kooi, S. E.; Lee, H.; *Self-Limiting Electrospray Deposition for the Surface Modification of Additively Manufactured Parts*, ACS Spring National Meeting and Expo (virtual), Mar. 2020, <https://www.morressier.com/article/selflimiting-electrospray-deposition-surface-modification-additively-manufactured-parts/5e73d6ce139645f83c22a97f?>
 38. Kovacevich, D. A.; Lei, L.; Han, D.; Kuznetsova, C.; Kooi, S. E.; Lee, H.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition for the Surface Modification of Additively Manufactured Parts*, APS March Meeting (virtual), Mar. 5, 2020.
 39. Lei, L.; Chen, S.; Nachtigal, C.; Moy, T.; Yong, Xin.; **Singer, J. P.**; *Electrospray Deposition of Nanowire Forests through Gelation*, APS March Meeting 2020 (virtual), Mar. 2, 2020.
 40. Lei, L.; Gamboa, A. R.; Kuznetsova, C.; Littlecreek, S.; Wang, J.; Zou, Q.; Zahn, J. D.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition on Polymer Masks*, Poster, APS March Meeting 2020 (virtual), Mar. 2, 2020.
 41. Lei, L.; Nachtigal, C.; **Singer, J. P.**; *Electrospray of Polymer Nanowire Conformal Coatings*, Northeast Complex Fluids Workshop, Manhattan College, New York, NY, Jan. 17, 2020.
 42. Hasan, M.; **Singer, J. P.**; Epoxy-based bicontinuous nanocomposite monoliths, MRS Fall Meeting 2019, Boston, MA, Dec. 7, 2019.
 43. Lei, L.; Bontoux, L.; Kuznetsova, C.; Kovacevich, D. A.; Tenorio, M.; Pelegri, A. A.; **Singer, J. P.**; *Morphological and Mechanical Properties of Polymer Composites Created by Self-Limiting Electrospray Deposition*, Poster, MRS Fall Meeting 2019, Dec. 5, 2019.
 44. Lei, L.; Kovacevich, D. A.; Han, D.; Kuznetsova, C.; Lee, H.; **Singer, J. P.**; *Self-Limiting Electrospray Deposition for Postprocessing of 4D Printing*, Poster, MRS Fall Meeting 2019, Dec. 5, 2019.
 45. Ma, T.; Signorelli, M.; Dsouza, D.; Ryerson, K. M.; Zhao, Y.; Osuji, C.; **Singer, J. P.**; *Electrohydrodynamic Bridging for Scalable Thermal Oscillators*, MRS Fall Meeting 2019, Dec. 2, 2019.
 46. Kovacevich, D. A.; Nitzsche, M. P.; Saro-Cortes, V.; Gamboa, A. R.; Davis, E.; Ma, T.; **Singer, J. P.**; *Thermocapillary Dewetting-Based Dynamic Spatial Light Modulator*, 3rd WCMNM, Sept. 10, 2019.
 47. Kovacevich, D. A.; Lei, L.; Kuznetsova, C.; Han, D.; Yang, C.; Lee, H.; **Singer, J. P.**; *Electrospray Deposition for Additive Manufacturing Post-Processing*, NJ SAMPE Additive Manufacturing Symposium, Jun. 14, 2019.
 48. Kovacevich, D. A.; Lei, L.; Kuznetsova, C.; Han, D.; Yang, C.; Lee, H.; **Singer, J. P.**; *Effects of Substrate Geometry on Thickness-Limited Electrosprayed Coatings*, Poster, 11th Northeast Complex Fluids and Soft Matter Workshop, May 23, 2019.
 49. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Obtaining Thickness-Limited Electrospray Deposition for 3D Coating*, 11th Northeast Complex Fluids and Soft Matter Workshop, May. 23, 2019.
 50. Ma, T.; Kovacevich, D. A.; Nitzsche, M.; Saro-Cortes, V.; Gamboa, A.; Davis, E.; **Singer, J.P.**; *Thermocapillary Dewetting Based Dynamic Spatial Light Modulator*, Poster, 11th Northeast Complex Fluids and Soft Matter Workshop, May. 23, 2019.
 51. **Singer J. P.**; *Self-Limiting Electrospray Deposition for 3D Post-Processing*, NJ-Tech Council

- Innovation Showcase: 3D Printing, Machine Learning Algorithms & Robotics*, Siemens, Princeton, NJ, May 16, 2019.
52. Kovacevich, D. A.; Lei, L.; Kuznetsova, C.; Han, D.; Yang, C.; Lee, H.; **Singer, J. P.**; *Effects of Substrate Geometry on Thickness-Limited Electro sprayed Coatings*, Poster, New Jersey Space Grant Consortium Poster Session, May 3, 2019.
 53. Lei, L.; Kovacevich, D. A.; Kuznetsova, C.; Han, D.; Bontoux, L.; Tenorio, M.; Klein, L. C.; Pelegri, A.; Lee, H.; Rodriguez, G.; Jitianu, A.; **Singer, J. P.**; *Obtaining Self-Limiting Electro spray Deposition for Functional 3D Coating*, Poster, 33rd Annual Symposium of the Laboratory for Surface Modification, Apr. 12, 2019.
 54. Ma, T.; Sridhar, A.; Buznitsky, K.; Signorelli, M.; **Singer, J. P.**; *Measuring Thermophysical Properties of Glassy Materials via Focused Laser Spike Dewetting*, APS March Meeting 2019, Boston, MA, Mar. 6, 2019.
 55. Lei, L.; Kovacevich, D. A.; Kuznetsova, C.; Han, D.; Bontoux, L.; Tenorio, M.; Klein, L. C.; Pelegri, A.; Lee, H.; Rodriguez, G.; Jitianu, A.; **Singer, J. P.**; *Self-Limiting Electro spray Deposition of Polymer and Polymer Composites*, APS March Meeting 2019, Mar. 6, 2019.
 56. Ma, T.; Sridhar, A.; Buznitsky, K.; Signorelli, M.; **Singer, J. P.**; *Measuring Thermophysical Properties of Glassy Materials via Focused Laser Spike Dewetting*. APS March Meeting 2019, Mar. 6, 2019.
 57. Ma, T.; Guzman-Pichardo, J.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Focused laser spike (FLaSk) thermocapillary patterning of micro/nanostructures*, *Laser Applications in Microelectronic and Optoelectronic Manufacturing*, (LAMOM) XXIV, International Society for Optics and Photonics: 2019, Mar. 4, 2019.
 58. Kovacevich, D. A.; Lei, L.; Kuznetsova, C.; Han, D.; Yang, C.; Lee, H.; **Singer, J. P.**; *Effects of Substrate Geometry on Thickness-Limited Electro sprayed Coatings*, Poster, 10th Northeast Complex Fluids and Soft Matter Workshop, Jan. 18, 2019.
 59. Ma, T.; Nitzsche, M.; Gamboa, A. M.; Saro-Cortes, V.; Rucker, W.; Birnie, D.; **Singer, J.P.**; *Localized Physical Vapor Deposition via Focused Laser Spike Dewetting of Gold Thin Films for Nanoscale Patterning*, 10th Northeast Complex Fluids and Soft Matter Workshop, Jan. 18, 2019.
 60. Kovacevich, D. A.; Lei, L.; Kuznetsova, C.; Han, D.; Yang, C.; Lee, H.; **Singer, J. P.**; *Electro spray Deposition for Additive Manufacturing Post-Processing*, ASME IMECE 2018, Nov. 9, 2018.
 61. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Obtaining Thickness-Limited Electro spray Deposition for 3D Coating*, ASME IMECE Meeting 2018, Nov. 9, 2018.
 62. Ma, T.; **Singer, J. P.**; *Focused Laser Spike Dewetting for Metrology of Thin Films*, ASME IMECE 2018, Pittsburgh, PA, Nov. 6, 2018.
 63. Hasan, M.; **Singer, J.P.**; Shahjahan, I.; 3D Compatible Sacrificial Nanoimprint Lithography for Tuning the Wettability of Thermoplastic Materials, IMECE, Pittsburgh, PA, Nov. 6, 2018.
 64. Ma, T.; **Singer, J. P.**; *Focused laser spike dewetting for metrology of thin films*, The 45th North American Thermal Analysis Society Conference, Aug. 8, 2018
 65. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Melting Gel Materials by Electro spray Deposition*, 74th New England Complex Fluids Workshop, Mar. 30, 2018.
 66. Ma, T.; **Singer, J. P.**; *Focused Laser Spike Dewetting for Metrology of Thin Films*, APS March Meeting 2018, Los Angeles, CA, Mar. 6, 2018.
 67. Ma, T.; Gamboa, A. M.; Nitzsche, M.; Rucker, W.; Birnie, D.; **Singer, J.P.**; *Focused Laser Dewetting of Gold Nanofilms and Laser Induced Localized Physical Vapor Deposition*. APS March

Meeting 2018, Mar. 6, 2018.

68. Gamboa, A. R.; Ma, T.; Lei, L.; Saro-Cortes, V.; **Singer, J. P.**; *Templating Electrohydrodynamic Instabilities with Thermocapillary Multidewetting*, APS March Meeting 2018, Mar. 6, 2018.
69. Gamboa, A. R.; Nitzsche, M. P.; Saro-Cortes, V.; Ma, T.; Lei, L.; **Singer, J. P.**; *Thermocapillary Multidewetting of Thin Films*, Poster, 32nd Annual Symposium of the Laboratory for Surface Modification/Institute for Advanced Materials, Devices, and Nanotechnology, Feb. 27, 2018.
70. Kovacevich, D. A.; Lei, L.; **Singer, J. P.**; *Spatial Constraints on the Effectivity of Electrospray Deposition for Conformal Coatings*, Poster, 32nd Annual Symposium of the Laboratory for Surface Modification/Institute for Advanced Materials, Devices, and Nanotechnology, Feb. 27, 2018.
71. Gamboa, A. R.; Nitzsche, M. P.; Saro-Cortes, V.; Ma, T.; Lei, L.; **Singer, J. P.**; *Thermocapillary Multidewetting of Thin Films*, MRS Fall Meeting 2017, Nov. 30, 2017.
72. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Melting Gel Materials by Electrospray Deposition*, Poster, MRS Fall Meeting 2017, Nov. 26, 2017.
73. Kovacevich, D. A.; Lei, L.; Nitzsche, M. P.; Gamboa, A. R.; **Singer, J. P.**; *Self-Limiting Electrospray for the Conformal Coating of 3D Objects*, Poster, ASME IMECE 2017, Nov. 3, 2017.
74. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Melting Gel Materials by Electrospray Deposition*, 91st ACS Colloid & Surface Science Symposium, Jul. 9, 2017.
75. **Singer, J. P.**; Ma, T.; Wang, J.; Zou, Q.; Bordeenithikasem, P.; Liu, J.; Schroers, J.; *Focused Laser Dewetting of Metallic Thin Films*, APS March Meeting 2017, New Orleans, LA, Mar. 16, 2017.
76. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Melting Gel Materials by Electrospray Deposition*, APS March Meeting 2017, Mar. 12, 2017.
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78. Lei, L.; Kovacevich, D. A.; Nitzsche, M. P.; Ryu, J.; Al-Marzoki, K.; Rodriguez, G.; Klein, L. C.; Jitianu, A.; **Singer, J. P.**; *Morphological Control of Melting Gel Materials by Electrospray Deposition*, 6th Northeast Complex Fluids and Soft Matter Workshop, Jan. 13, 2017.
79. Ma, T.; Bordeenithikasem, P.; Liu, J.; Schroers, J.; **Singer, J.P.**; *Focused Laser Spike Dewetting as a Tool for the Rapid Kinetic Study of Metallic Glass Compositional Libraries*, Poster, MRS Fall Meeting 2016, Nov. 29, 2016.
80. **Singer, J. P.**; Shajahan, I.; Shaffer, D.; Lei, L.; Chan, E.; *Sacrificial Nanoimprint Lithography as a Scalable Approach to Porous Polymer Membranes for Filtration*, MRS Fall Meeting 2016, Boston, MA, Nov. 28, 2016.
81. Lei, L.; Shajahan, I.; Shaffer, D.; Chan, E.; **Singer, J. P.**; *Sacrificial Nanoimprint Lithography as a Scalable Approach to Porous Polymer Membranes*, 2016 Annual Meeting of the APS Mid-Atlantic Section, Oct. 15, 2016.
82. Ma, T.; Nitzsche, M.; **Singer, J.P.**; *Focused Laser Dewetting of Metallic Thin Films*, 2016 Annual Meeting of the APS Mid-Atlantic Section, Oct. 15, 2016.
83. **Singer, J. P.**; Kooi, S. E.; Thomas, E. L.; *The Parametric Study of Focused Laser-Induced Marangoni Dewetting for Patterning Polymer Thin Films*, APS March Meeting 2016, Baltimore, MA, Mar. 14, 2016.
84. **Singer, J. P.**; Padmanabhan, J.; Pelligra, C. I.; Choo, Y.; Ketkaew, J.; Kyriakides, T.; Schroers, J.; Osuji, C. O.; *Multiscale Patterning of Metallic Glasses through Sacrificial Zinc Oxide Templates for Biologically Functional Surfaces*, MRS Fall Meeting 2015, Boston, MA, Dec. 1, 2015.

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87. **Singer, J. P.**; Style, R. W.; Hu, H.; Boltyanskiy, R.; Dufresne, E. R.; Osuji, C. O.; *Scalable Directed Assembly of Electrospayed Nanoparticles by Durotaxis*, AIChE Annual Meeting 2014, Atlanta, GA, Nov. 16, 2014.
88. **Singer, J. P.**; Pelligra, C. I.; Huang, S.; Osuji, C. O.; *Solution Processing of Ordered Thin Film Nanowire Composites by Magnetic Field Alignment*, ACS Colloids 2014, Philadelphia, PA, Jun. 24, 2014.
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90. **Singer, J. P.**; Lin, P.-T.; Kooi, S. E.; Kimerling, L. A.; Jurgen, M.; Thomas, E. L.; *Direct-Write Dewetting of Polymer Thin Films by a Laser-Induced Thermal Gradient*, APS March Meeting 2014, Denver, CO, Mar. 6, 2014.
91. **Singer, J. P.**; Pelligra, C. I.; Huang, S.; Osuji, C. O.; *Nanowire Heterojunction Solar Cells Produced by Magnetic Alignment-Enhanced Solution Processing*, Northeast Complex Fluids and Soft Matter Workshop 2013, Piscataway, NJ, Oct. 25, 2013.
92. **Singer, J. P.**; Veysset, D.; Kooi, S. E.; Nelson, K. A.; Thomas, E. L.; *In situ Observation of the Interaction of Laser Driven Shock Waves with Phononic Microstructure*, MRS Fall Meeting 2012, Boston, MA, Nov. 26, 2012.
93. **Singer, J. P.**; Kooi, S. E.; Thomas, E. L.; *Rapid Patterning of 3D Hierarchical Microstructures by Focused Laser Spike (FLaSk) Annealing*. Poster, ASME Congress 2012, Houston, TX, Nov. 12-15, 2012.
94. **Singer, J. P.**; Veysset, D.; Kooi, S. E.; Nelson, K. A.; Thomas, E. L.; *In situ Observation of the Interaction of Laser Driven Shock Waves with Phononic Microstructure*, ASME Congress 2012, Houston, TX, Nov. 14, 2012.
95. **Singer, J. P.**; Jia, L.; Ybarra, J. C.; Hamer, T. T.; Kooi, S. E.; Thomas, E. L.; *Rapid Hierarchical Patterning of Photoactivated Chemically Amplified Resists by Focused Laser Spike (FLaSk) Annealing*, MRS Fall Meeting 2011, Boston, MA, Nov. 29, 2011.
96. **Singer, J. P.**; Gotrik, K. W.; Ross, C. A.; Kooi, S. E.; Thomas, E. L.; *Thermal Manipulation of Block Copolymer Morphology by Focused Laser Spike (FLaSk) Annealing*, APS Spring Meeting 2011, Dallas, TX, Mar. 22, 2011.
97. **Singer, J. P.**; Lee, J.-H.; Ni, S.; Gibson, M. A.; Kooi, S. E.; Thomas, E. L.; *Combinations of 3D Direct Write and Large Area Patterning Techniques for Rapid Fabrication of Hierarchical and Complex Structures*, Poster, MRS Fall Meeting 2010, Boston, MA, Nov. 29-Dec. 3, 2010.
98. **Singer, J. P.**; Lee, J.-H.; Ni, S.; Gibson, M. A.; Kooi, S. E.; Thomas, E. L.; *Design of Novel Lithographic Strategies through Application of Electromagnetic and Multiphysics Simulations*, Poster, COMSOL Boston 2010, Newton, MA, Oct. 7-9, 2010.
99. **Singer, J. P.**; Lee, J.-H.; Kooi, S. E.; Thomas, E. L.; *Combined Direct Write Multiphoton Lithography and Proximity Nanopatterning for High Throughput Writing of Non-Periodic Structures with Periodic Sub-Elements*, PIERS Cambridge 2010, Cambridge, MA, July 6, 2010.
100. **Singer, J. P.**; Meyer, M. S.; Speer Jr., R. M.; Fischer, J. E.; Pinkerton, F.E.; *Determination of the*

Phase Behavior of (LiNH₂)_c(LiBH₄)_{1-c} Quaternary Hydrides through in Situ X-ray Diffraction, MRS Fall Meeting, Boston, MA, Dec. 2, 2009.

101. **Singer, J. P.**; Laudisio, G.; Yushin, G.; Yildirim, T.; Gogotsi, Y.; Fischer, J. E.; *Structure Characterization of Carbide-Derived Carbon (CDC) for Optimal Hydrogen Storage by X-ray Scattering*, MRS Fall Meeting, Boston, MA, Nov. 29, 2006.

SUPERVISED RESEARCHERS

1. Postdoctoral Associates

- 1.1. Kelly Kyker-Snowman (Sep. 2022-Present)
- 1.2. Zainab Abd Al-Jaleel (Oct. 2021-Oct. 2022)
- 1.3. Tianxing Ma (Feb. 2021-Sep. 2021)
- 1.4. Molla Hasan (Sep. 2017-Aug. 2019, 2018 Mistletoe Fellow, currently tenure-track faculty at the University of Texas Permian Basin)

2. Doctoral Students

- 2.1. Seyyed Rahman Pejman Sereshkeh (Jan. 2021-Present)
- 2.2. Bryan Llumiquinga (July 2020-Present, 2020 Rutgers Dean's Fellow, 2021 GEM Associate Fellow)
- 2.3. Sarah Park (Jun. 2020-Present, MRS Graduate Student Award Finalist 2022)
- 2.4. Robert Warren-Green (Jun. 2019-Present, 2019 Rutgers SUPER-Grad Fellow, 2020 GEM Associate Fellow)
- 2.5. Yogin Patel (Jan. 2019-Present)
- 2.6. Michael Grzenda (Sep. 2018-Present)
- 2.7. Lin Lei (Sep. 2016-Jan. 2021, Currently tenure-track faculty at Chongqing Jiaotong University)
- 2.8. Tianxing Ma (Sep. 2015-Jan. 2021)

3. Master's of Science Students

- 3.1. Ivy Nguyen (Oct. 2022-Present)
- 3.2. Luke Brennan (Apr. 2022-Present)
- 3.3. Yiqun Xu (Sep. 2021-Present)
- 3.4. Rituparna Mohanty (Sep. 2021-Present)
- 3.5. Zaynab Hazaveh (Sep. 2021-Present)
- 3.6. Yifei Guo (Sep. 2020-Oct. 2022)
- 3.7. Bryan Llumiquinga (Aug. 2018-July 2020)
- 3.8. Arielle Marie Gamboa (May 2019-May 2020, 2020 TBP Graduate Fellow)
- 3.9. Dylan Kovacevich (May 2019-May 2020, 2019 NJSGC Graduate Fellow, 2020 Rutgers School of Graduate Studies Outstanding Master's Student)
- 3.10. Adithya Sridhar (Sep. 2016-Aug. 2018)

4. Master's of Engineering Students

- 4.1. Pratul Rachakonda (Sep. 2020-Oct. 2022)
- 4.2. Zhiyi Chen (Jan. 2021-Oct. 2021)
- 4.3. Siddharth Patel (Jan. 2021-Oct. 2021)

5. Research Affiliates

- 5.1. Charm Nicholas (May 2022-Aug. 2022)
- 5.2. Jihyun Ryu (May 2016-Jan. 2017)

6. Undergraduate Students

- 6.1. Iris You (Oct. 2022-Present)
- 6.2. Nivedha Ganesan (Aug. 2022-Present)

- 6.3. Aarush Sood (Apr. 2022-Present, 2022 REU Student)
- 6.4. Ayman Rouf (Apr. 2022-Present)
- 6.5. Maxim Arkhipov (Mar. 2022-Present, 2022 REU Student, 2022 NJS GC Academic Year Fellow)
- 6.6. Weronika Wasniowska (Nov. 2021-Present, 2023 J. J. Slade Senior Honors Thesis)
- 6.7. Sriya Bapatla (Sep. 2021-Present, 2022 NJS GC Academic Year Fellow)
- 6.8. Noah McAllister (Mar. 2021-Present, 2021 REU Student, 2021 NJS GC Academic Year Fellow)
- 6.9. Kelly Hughes (Oct. 2019-Present, 2020 REU Student)
- 6.10. Rachel Vladimirsky (Apr. 2022-Aug. 2022, 2022 REU Student)
- 6.11. Khyathi Dadi (Feb. 2022-Aug. 2022, 2022 NJS GC Summer Fellow)
- 6.12. Ishaan Dey (Apr. 2022-Aug. 2022)
- 6.13. Charm Nicholas (May 2021-May 2022, 2022 J. J. Slade Senior Honors Thesis)
- 6.14. Luke Eidle (May 2021-May 2022, 2021 RU-NJS GC Summer Research Cluster Student)
- 6.15. Alex Liu (Oct. 2019-May 2022, 2020 RU-NJS GC Summer Research Cluster Student)
- 6.16. Darrel Dsouza (Mar. 2019-May 2022, 2019 NJS GC Academic Year Fellow, 2022 J. J. Slade Senior Honors Thesis)
- 6.17. Catherine Nachtigal (Mar. 2019-May 2022, 2019 NJS GC Academic Year Fellow, 2021 Rutgers Chancellor's Student Leadership Research Excellence Award, 2021 Tau Beta Pi Scholarship, 2022 MIT AeroAstro Distinguished Scholar, 2022 J. J. Slade Senior Honors Thesis)
- 6.18. Fiona Wang (Mar. 2021-Aug. 2021)
- 6.19. Ariana Dyer (Jun. 2020-Aug. 2021, 2020 REU Student, 2021 NJS GC Summer Fellow)
- 6.20. Joseph Edralin (Jun. 2018-May 2021, 2018 RU-NJS GC Summer Research Cluster Student)
- 6.21. Daniel Cheng (Sep. 2020-May 2021)
- 6.22. Matthew Murphy (Jun. 2020-Jul. 2020, 2020 REU Student)
- 6.23. Kyle Buznitsky (Sep. 2018-May 2020, J. J. Slade Senior Honors Thesis)
- 6.24. Christianna Kuznetsova (Feb. 2018-Dec. 2019, 2019 NJS GC Summer Fellow)
- 6.25. Matthew Signorelli (Mar. 2018-Aug. 2019)
- 6.26. Connie Liou (Apr. 2019-Aug. 2019)
- 6.27. Vivek Mhatre (Feb. 2019-Aug. 2019)
- 6.28. Krysten McKenzie Ryerson (May 2019-July 2019, 2019 REU Student)
- 6.29. Dylan Kovacevich (May 2017-May 2019, 2018 NJS GC Academic Year Fellow, 2019 J. J. Slade Senior Honors Thesis, 2019 Rutgers Chancellor's Student Leadership Research Excellence Award)
- 6.30. Michael Nitzsche (Aug. 2016-May 2019, 2017 NJS GC Academic Year Fellow, 2019 J. J. Slade Senior Honors Thesis, Cap and Skull, 2019 TBP Graduate Fellow)
- 6.31. Arielle Gamboa (May 2016-May 2019, 2019 J. J. Slade Senior Honors Thesis)
- 6.32. Valeria Saro-Cortes (Jan. 2016-May 2019, 2016 NJS GC Academic Year Fellow, 2019 J. J. Slade Senior Honors Thesis, 2019 GEM Full Fellow, 2019 Ford Predoctoral Honorable Mention)
- 6.33. Jennifer Guzman (May 2018-Aug. 2018, 2018 RISE Student)
- 6.34. Imrhankhan Shajahan (May 2016-Aug. 2017)
- 6.35. Dennis Chako (May 2017-Aug. 2017, 2017 REU Student)
- 6.36. Krishna Gotur (May 2017-Aug. 2017)
- 6.37. Bryan Llumiquinga (May 2016-Aug. 2017, co-advised with Prof. Andrew Norris)

6.38. Huafeng Fan (Jul. 2016-Dec. 2016)

7. High School Students

7.1. Elise Shan (Apr. 2022-Sep. 2022)

8. Senior Capstone Teams

8.1. Justin Duran, Cassandra McGowan, Jack McAleavy, Edgar Moreno, Mohammed Ibrahim (Sep. 2022-Present)

8.2. Luke Eidle, Aadil Mahmood, Animesh Chackraverty, Will Rice, and Agam Modasiya (Sep. 2021-May 2022)

8.3. Catherine Nachtigal, Gaurav Aggarwal, Sydney Jenkins, Alex Liu, and Darrel D'Souza (Sep. 2021-May 2022)

8.4. Jake Ari, Alex Bogut, Andro Mikhaeil, James Wu, and Peter Yannella (Sep. 2020-May 2021)

8.5. Kyle Buznitsky, Kaede Barringer, Landon Cordova, Parthiv Desai, Mahatru Krishnamurthy (Sep. 2019-May 2020)

8.6. Michael Nietzsche, Arielle Gamboa, Valeria Saro-Cortes, Dylan Kovacevich, and Emily Davis (Sep. 2018-May 2019)

8.7. Martin Fronius, Jazz Lindquist, Ryan McGill, Steven Mutek, Hua Pan, Josh Tamayo (Sep. 2016-May 2017)

9. High School Student Summer Research Groups

9.1. Adithya Srinivasan, Aqsa Khawaja, Mariam Louiz, Sam Surapaneni, Spencer Peng, (Jul. 2021-Aug. 2021, Student Learning and Achievement Aerospace and Mechanical (SLAAM) Engineering Summer Academy)

9.2. Shankar Saikia, Vansh Harkawat (Jul. 2019-Aug. 2019, SLAAM Engineering Summer Academy)

9.3. Joseph Schugel, Nikhila Sundar, Maurice Korish (Jul. 2018-Aug. 2018, SLAAM Engineering Summer Academy)

9.4. Sanjana Sastry, Jonathan Yuen, Samuel Defalco (Jul. 2018-Aug. 2018, SLAAM Engineering Summer Academy)

9.5. Aaron Anesgart, Chloe Cho, Saransh Chopra, Michael Higgins, Saira Reyes (Jul. 2016, NJGSET Summer Program)

TEACHING EXPERIENCE

- **Undergraduate Courses:** *Honors Engineering Mechanics: Statics* (Fall 2015, Fall 2016, Fall 2022), *Multiphysics Simulations* (Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020, Fall 2020).
- **Graduate Courses:** *Thermodynamics Theory* (Spring 2016, Spring 2017, Spring 2021).

INSTITUTIONAL SERVICE EXPERIENCE

RUTGERS, THE STATE UNIVERSITY OF NEW JERSEY, Piscataway, NJ

CMSCE Advisory Board Member

June 2021-Present

- Providing input on the activities and programmatic content of the Center for Mathematics, Science, and Computer Education, a center that seeks to disseminate STEM education to the wider community through courses, workshops, and certificate programs for the public.

Shared Fume Hood Facility Administrator

November 2015-Present

- This is a facility consisting of two fume hood bays for conducting experiments, a plasma cleaner, a spin coater, balances, and hotplates, as well as any custom equipment users install on a temporary basis. As administrator, I oversee this facility, work with the MAE lab manager to develop protocols

and training for its equipment, manage the access and roster, and work with users for any custom experiments.

MAE Open House Organizer January 2017-May 2018

- Organized the Rutgers MAE Open House. This public event brings roughly 100 students and their family members through the Department facilities to learn about the undergraduate program and introduce them to the labs and student projects.

MAE Rutgers Day Organizer January 2017-May 2018

- Organized the MAE Department's activities at two Rutgers Day events, in which thousands of members of the general community visit the university for various activities. In 2017, MAE conducted its Senior Capstone Project Symposium at this event. In 2018, MAE managed a student activities booth with graduate and capstone project demonstrations.

Graduate Admissions Committee January 2016-February 2018

- As a member of this committee, I reviewed graduate student applications and made admission decisions for the Design and Controls focus area.

Mentor: Venus Flytrap Module January 2016-March 2016

- Served as a mentor for a student project to design and fabricate a robotic Venus flytrap as an interactive module for the U.S. Botanic Garden. Assisted with initial demonstration at the 2016 US Science and Engineering Festival's Grand Finale Exposition in Washington, D.C.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA

DCGS Representative September 2009-May 2011

- Represented students on Departmental Committee for Graduate Studies to assess and redesign graduate requirements, including core curriculum, minor requirement and technical electives.

OTHER SERVICE EXPERIENCE

- **Volunteer Instructor:** Taught Virtual Research Group (VRG) course as an 18 course-hour elective in the 2017, 2018, 2019, 2020, 2021, 2022 NJ Governor's School of Engineering and Technology, a four-week summer program for high school juniors.
- **Workshop Co-organizer:** The 10th Northeast Complex Fluids and Soft Matter Workshop, Rutgers University, Piscataway, NJ, Jan. 18, 2019.
- **Journal Reviewer:** *Soft Matter* (RSC), *Applied Surface Science*; *Sensors & Actuators: B. Chemical* (Elsevier), *Journal of Materials Processing Technology* (Elsevier), *International Journal of Solids and Structures* (Elsevier), *ACS Nano* (ACS), *ACS Applied Materials & Interfaces* (ACS), *Macromolecules* (ACS), *ACS Macro Letters* (ACS), *ACS Omega* (ACS), *ACS Applied Polymer Materials* (ACS), *Journal of Applied Physics* (AIP), *Nature* (NPG), *Light: Science & Applications* (NPG), *Scientific Reports* (NPG), *Nature Photonics* (NPG), *Crystals* (MDPI), *Journal of Micro- and Nano-Manufacturing* (ASME), *Journal of Micro/Nanolithography, MEMS, and MOEMS* (SPIE), *JVST A: Journal of Vacuum Science and Technology* (JVS).
- **Grant Panelist:** National Science Foundation (Future Manufacturing; Polymers, Particulate and Multiphase Processes; Nanomanufacturing; and Advanced Manufacturing) and Israeli Science Foundation.
- **Session Organizer:** "Thermocapillary and Solvocalillary Methods for the Manipulation of Soft Matter" (APS March Meeting 2018), "Electrostatic Manipulation of Fluids and Soft Matter" (APS March Meeting 2020, APS March Meeting 2021, APS March Meeting 2023 (upcoming)), and "Physics of Hierarchical and Multiscale Soft Matter" (APS March Meeting 2022).

- **Volunteer**
 - Society of Women Engineers Girl Scout Virtual Lab Tour (Nov. 13, 2021, Nov. 4 2022)
 - Rutgers Junior Science & Humanities Symposium (Paper and presentation Judge Jan.-Feb. 2020)
 - John D. O’Bryant School of Mathematics and Science (Dec. 17, 2020).
 - University of Pennsylvania MSE Senior Design Competition (Judge Apr. 2017, Apr. 2018, Apr. 2020).
 - 57th National Junior Science & Humanities Symposium (Reverse Science Fair Participant May 2019).
 - FIRST Robotics Technical Challenge (Judge 2015-2016, 2016-2017, 2017-2018 Season).
 - Student Innovation and Entrepreneurship Expo (Presenter Nov. 1, 2017).
 - East Brunswick High School science night (Jan. 19, 2017).
 - Lectured on polymer science at the Stuart Country Day School of the Sacred Heart (August 15, 2016) and the Boston Arts Academy (Nov. 29, 2016).
 - New Haven Family Science Nights (Volunteer 2014-2015).

SELECTED MEDIA COVERAGE

1. Rutgers SOE Website, *SoE Professors Receive 2020-2021 University-wide Faculty Awards*, Dec. 1, 2021, <https://soe.rutgers.edu/story/soe-professors-receive-2020-2021-university-wide-faculty-awards>.
2. NewScientist, *Covid-19 vaccine tested with suction technique similar to cupping*, Nov. 5, 2021, <https://www.newscientist.com/article/2296526-covid-19-vaccine-tested-with-suction-technique-similar-to-cupping/#ixzz7C89eXUg7>.
3. Ansys Case Study, *Rutgers University Creates Scalable Multiphysics Simulations Course with Ansys Student*, Oct. 14, 2021, <https://www.ansys.com/content/dam/resource-center/case-study/rutgers-university-case-study.pdf>
4. Rutgers Today, *U.S. Secretary of Commerce Gina Raimondo and Congressman Frank Pallone joined President Jonathan Holloway for a tour of three engineering facilities to showcase federal investment in research*, Aug. 9, 2021, https://www.rutgers.edu/news/rutgers-hosts-federal-leaders-research-tour?utm_source=newsletter&utm_medium=email&utm_campaign=rutgerstoday&utm_content=Research%20%26amp%3B%20Innovation.
5. Rutgers MAE Website, *Liftoff! Research Projects Target Space*, Nov. 1, 2020, <https://mae.rutgers.edu/news/liftoff-research-projects-target-space>.
6. PhysOrg, *Plant-based spray could be used in N95 masks and energy devices*, Oct. 7, 2020, <https://phys.org/news/2020-10-plant-based-n95-masks-energy-devices.html>.
7. Rutgers SOE Website, *SoE Professors Cook-Chenault, Najafizadeh, and Singer Receive 2019-20 Provost’s Awards*, Jun. 26, 2020, <https://soe.rutgers.edu/story/soe-professors-cook-chenault-najafizadeh-and-singer-receive-2019-20-provost%E2%80%99s-awards/>.
8. PhysOrg, *A great new way to paint 3-D-printed objects*, Apr. 28, 2020, <https://phys.org/news/2020-04-great-d-printed.html/>.
9. NASA frontpage, *Sustaining Astronauts in Space: NASA Selects Five Research Projects Designed to Improve Crop Habitats*, Feb. 20, 2020, <https://www.nasa.gov/feature/nasa-selects-five-research-projects-designed-to-improve-crop-habitats/>.
10. RU Engineer Magazine, *Peer-to-Peer Advantage*, Cover Story, Fall 2019 Issue, <https://soe.rutgers.edu/sites/default/files/newsletter/Fall2019/html5forpc.html?page=0>
11. Yale Daily News, *Researchers replicate surface structures at atomic scale*, Nov. 13, 2018,

- <https://yaledailynews.com/blog/2018/11/13/researchers-replicate-surface-structures-at-atomic-scale/>.
12. Rutgers Today, *Venus Flytrap Robot Built by Rutgers Students*, Apr. 27, 2016, <http://news.rutgers.edu/news/venus-flytrap-robot-built-rutgers-students/20160426#.Vz9XBZErLD6/>.
 13. Rice News, *Light and sound fire scientists' imaginations*, Dec. 12, 2013, <http://news.rice.edu/2013/12/12/light-and-sound-fire-scientists-imaginations/>.
 14. ABC News, *Nanomaterial Can Stop a Speeding Bullet, Strengthen Soldiers' Body Armor*, Nov. 15, 2012, <http://abcnews.go.com/blogs/technology/2012/11/nanomaterial-can-stop-a-speeding-bullet-strengthen-soldiers-body-armor/>.