

JUNGHOO YEOM

Mechanical Engineer, Materials Science & Technology Division, Code 6354, US Naval Research Laboratory
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EDUCATION

Ph.D. in Mechanical Engineering,	University of Illinois, Urbana, IL,	Dec 2007
M.S. in Mechanical Engineering,	University of Illinois, Urbana, IL,	May 2003
B.S. in Mechanical Design and Production Engineering,	Yonsei University, Seoul, Korea,	August 2000

RESEARCH/WORK EXPERIENCE

Mechanical Engineer, Code 6354, Materials S&T Division, Naval Research Lab., Washington, DC, Sep 2020 – present
Assistant Professor, Department of Mechanical Engineering, Michigan State University, East Lansing, Aug 2013 – May 2020
ONR Summer Faculty, Code 6354, Materials S&T Division, Naval Research Lab., Washington, DC, Jun-Aug 2018 & Jun-Aug 2019
Research Chemist/NRC Post-doc, Naval Research Laboratory, Washington, D.C., Apr 2012 – Jul 2013.
Research Scientist, Cbana Laboratories, Inc., Champaign, IL, Oct 2009 – Mar 2012.
Visiting Scholar, Dept. of Mech. Sci. Eng., University of Illinois, Urbana, IL, Jan 2010 – Feb 2012.
Post-doctoral Researcher, Dept. of Mech. Sci. Eng., University of Illinois, Urbana, IL, Jan 2008 – Oct 2009.
Research Assistant, Dept. of Mech. Sci. Eng. and Chem. Eng., University of Illinois, Urbana, IL, Jan 2001– Dec 2007.

TEACHING AND ADVISING EXPERIENCE

Assistant Professor, Dept. of Mech. Eng., Michigan State University, East Lansing, MI, Aug 2013 – present
MechSE Teaching Fellow, Dept. of Mech. Sci. Eng., University of Illinois, Urbana, IL, Jan 2007 – Dec 2007
Teaching Assistant, Dept. of Mech. Sci. Eng., University of Illinois, Urbana, IL, Aug 2000 – May 2005
Advised 1 postdoc, 3 PhD students, 1 master student, +20 undergraduate researchers.

SKILLS

Extensive (15+ years) hand-on microfabrication experiences (photo-lithography, e-beam lithography, plasma etching, wet etching, deposition, oxidation/doping, bonding etc.) and **nanofabrication techniques** (nanosphere lithography, nanoimprint lithography, etc.)

Device design, rapid prototyping, and packaging (3D modeling - Solidworks, AutoCAD, Pro/E etc.; metal and plastic 3D printing - FDM Prusa MK3S, BJP Exone M-lab)

Materials characterization and surface analysis (scanning electron microscopy and EDS — Hitachi S4700, JEOL6060, ZEISS LEO; ThermoFisher; atomic force microscopy — Dimension 3100, Asylum Research; in-situ nanoindentation – Hysitron P88)

Nanomaterial syntheses (solvothermal and hydrothermal synthesis of ZnO and TiO₂ nanowires, reduced graphene oxide flakes, carbon nanotubes)

Electrochemical characterization (cyclic voltammetry, chronoamperometry)

Manufacturing tools (Laser cutting, manual milling/lathing)

Engineering/Analysis Software (COMSOL, Matlab, Flownex)

PUBLICATIONS

Google Scholar: Total Citations = 2523, H-index = 25 (as of 8/7/2023)

1 book : "Nanofluidics and Microfluidics: Systems and Applications," Elsevier Science, January 2014. (ISBN: 978-14377-4469-9)

2 book chapters

4 US patents

41 peer reviewed journal publications

33 peer reviewed conference proceedings

55 invited/conference talks

Books:

1. S. Prakash and **J. Yeom**, "Nanofluidics and Microfluidics: Systems and Applications," Elsevier Science, January 2014. (ISBN: 978-1-4377-4469-9)

Book Chapters:

2. **J. Yeom**, "Micro-preconcentrator Technology for Portable Gas Chromatography System," *Encyclopedia of Nanotechnology*, 2nd Ed., Bharat Bhushan (Editor-in-Chief), Springer, 2015.
1. **J. Yeom** and M.A. Shannon, "Emerging Topics: Micro-coolers," *Comprehensive Microsystems Volume 3*, Yogesh B Gianchandani, Osamu Tabata, Hans Zappe (Editor-in-Chief), Elsevier Science, 2008, pp. 499-550.

Refereed Journal Papers (*corresponding author, ⁺equal contribution, [‡]Yeom's students or post-doc):

41. D.C. Ratchford, V.M. Breslin, T.J. Michael, G. Bazargan, P.A. Brown, D. Gunlycke, **J. Yeom**, A.D. Dunkelberger, J.C. Owrutsky, R. Balow, and B. Simpkins, "Strain-induced Modification of Photoluminescence in Quasi-2D Perovskite Thin Films," *Journal of Physical Chemistry C*, 127 (2023) 6371-6379.
40. M.J. Lefler, **J. Yeom**, C. Rudolf, R.E. Carter, and C.T. Love, "Structural and morphological analysis of the first alloy/dealloy of a bulk Si-Li system at elevated temperature," *ACS Omega* 7 (2022) 22317-22325.
39. A. Mehboudi[‡] and **J. Yeom**^{*}, "A passive Stokes flow rectifier for Newtonian fluids," *Scientific Reports* 11 (2021) 10182.
38. K. Asadi, **J. Yeom**, and H. Cho, "Strong internal resonance in a nonlinear, asymmetric microbeam resonator," *Microsystems & Nanoengineering* 7 (2021) 9.
37. Y. Zhang[‡], R. Mandal, D.C. Ratchford, R.J. Anthony, and **J. Yeom**^{*}, "Si nanocrystals/ZnO nanowires hybrid structures as immobilized photocatalysts for photodegradation," *Nanomaterials* 10 (2020) 491.
36. J. He, Y. Zhang[‡], Y. Guo, G. Rhodes, **J. Yeom**, H. Li, and W. Zhang, "Photocatalytic degradation of cephalexin by ZnO nanowires under simulated sunlight: Kinetics, influencing factors, and mechanisms," *Environmental International* 132 (2019) 105105.
35. X. Huang[‡], T. Bauder, T. Do, H. Suen, C. Boss, P. Kwon, and **J. Yeom**^{*}, "Additively manufactured preconcentrators for inline injection of volatile organic compounds," *Sensors* 19 (2019) 2748.
34. A. Mehboudi[‡] and **J. Yeom**^{*}, "Experimental and theoretical investigation of a low-Reynolds-number flow through deformable shallow microchannels with ultra-low height-to-width aspect ratios," *Microfluidics and Nanofluidics* 23 (2019) 66.
33. Y. Zhang[‡], X. Huang, and **J. Yeom**^{*}, "A floatable piezo-photocatalytic platform based on semi-embedded ZnO nanowire array for high-performance water decontamination," *Nano-Micro Letters* 11 (2019) 11.
32. A. Mehboudi[‡] and **J. Yeom**^{*}, "A one-dimensional model for compressible fluid flows through deformable microchannels," *Physics of Fluids*, 30 (2018) 092003.
31. A. Mehboudi[‡] and **J. Yeom**^{*}, "A two-step sealing-and-reinforcement SU8 bonding paradigm for the fabrication of shallow microchannels," *Journal of Micromechanics and Microengineering* 28 (2018) 035002.
30. X. Huang[‡], M. Bjork[‡], D.C. Ratchford, and **J. Yeom**^{*}, "Pitch control of hexagonal non-close-packed nanosphere arrays using isotropic deformation of elastomer," *Langmuir*, 33 (2017) 12218-12226.
29. K. Asadi, J. Li, S. Peshin[‡], J. Yeom, and H. Cho, "Mechanism of geometric nonlinearity in a nonprismatic and heterogeneous microbeam resonator," *Physical Review B*, 96 (2017) 115306.
28. J. Ju, X. Huang[‡], S. Kim, and **J. Yeom**^{*}, "Fabrication of Highly Ordered Silicon Nanowires by Metal Assisted Chemical Etching Combined with a Nanoimprinting Process," *Journal of Nanoscience and Nanotechnology*, 17 (2017) 7771-7774.
27. S. Zhang, L. Cai, W. Li, J. Miao, T. Wang, **J. Yeom**, N. Sepulveda, C. Wang, "Fully-Printed Silver Nanoparticle Based Stretchable Conductors and Strain Gauges", *Advanced Electronic Materials*, 3 (2017) 1700067.
26. J. Miao, L. Cai, S. Zhang, J. Nah, **J. Yeom**, C. Wang, "Air-Stable Humidity Sensor Using Few-Layer Black Phosphorus", *ACS Applied Materials Interface* 9 (2017) 10019-10026.
25. Y. Zhang[‡], C. Wang, and **J. Yeom**^{*}, "Filtration-Guided Assembly for Patterning One-Dimensional Nanostructures," *Nanotechnology* 28 (2017) 145302.
24. X. Huang[‡], D.C. Ratchford, P. Pehrsson, and **J. Yeom**^{*}, "Fabrication of metallic nanodisc hexagonal arrays using nanosphere lithography and two-step lift-off," *Nanotechnology* 27 (2016) 395302.

23. T. Do, C. Shin[‡], P. Kwon, and **J. Yeom***, “Fully-Enclosed Ceramic Micro-burners Using Fugitive Phase and Powder-based Processing,” *Scientific Reports* 6 (2016) 31336.
22. D.C. Ratchford, **J. Yeom**, J.P. Long, and P.E. Pehrsson, “Influence of Inhomogeneous Porosity on Silicon Nanowire Raman Enhancement and Leaky Mode Modulated Photoluminescence,” *Nanoscale* 7 (2015) 4124-4133.
21. Y. Zhang[‡], J.-H. Han, L. Zhu, M. A. Shannon, and **J. Yeom***, “Soft lithographic printing and transfer of photosensitive polymers: Facile fabrication of free-standing structures and patterning fragile and unconventional substrates”, *Journal of Micromechanics and Microengineering* 24 (2014) 115019.
20. H. Hu, V.V. Swaminathan, M.R.Z. Farahani, G. Mensing, **J. Yeom**, M.A. Shannon, and L. Zhu, “Hierarchically structured re-entrant microstructures for superhydrophobic surfaces with extremely low hysteresis,” *Journal of Micromechanics and Microengineering* 24 (2014) 095023.
19. **J. Yeom**, D. Ratchford, C.R. Field, T.H. Brintlinger, and P.E. Pehrsson, “Decoupling diameter and pitch in silicon nanowire arrays made by metal-assisted chemical etching”, (**selected as a frontispiece image**) *Advanced Functional Materials* 24 (2014) 106-116.
18. A. Tamayol⁺, **J. Yeom**⁺, M. Bahrami, and M. Akbari, “Low Reynolds number flows across ordered arrays of micro-cylinders embedded in rectangular micro/minichannels”, *International Journal of Heat and Mass Transfer*, 58 (2013) 420-428.
17. M. Behl, **J. Yeom**, Q. Lineberry, P. Jain, and M.A. Shannon, “A regenerable oxide-based H₂S adsorbent with nanofibrous morphology”, *Nature Nanotechnology* 7 (2012) 810-815.
16. J. Han, **J. Yeom**, G. Mensing, B. Flachsbar, and M. Shannon, “Characteristics of electrostatic gas micropumps with integrated polyimide passive valves,” *Journal of Micromechanics and Microengineering* 22 (2012) 095007.
15. H. Hu, **J. Yeom**, G. Mensing, Y. Chen, M.A. Shannon, and W.P. King, “Nano-fabrication with a flexible array of nano-apertures”, *Nanotechnology* 23 (2012) 175303.
14. D.D. Agonafer, **J. Yeom**, and M.A. Shannon, “Three dimensional CFD model of pressure drop in microTAS devices in a microchannel”, *Journal of Electronic Packaging* 133 (2011) 031011.
13. L. Zhu, N. Kroodasma, **J. Yeom**, J.L. Haan, M.A. Shannon, and D.D. Meng, “An on-demand microfluidic hydrogen generator with self-regulated gas generation and self-circulated reactant exchange with a rechargeable reservoir,” *Microfluidics and Nanofluidics* 11 (2011) 569-578.
12. C.R. Field, **J. Yeom**, A. Salehi-Khojin, and R.I. Masel, “Robust fabrication of selective and reversible polymer coated carbon nanotube-based gas sensors,” *Sensors and Actuators B* 148 (2010) 315-322.
11. A. Salehi-Khojin, C.R. Field, **J. Yeom**, and R.I. Masel, “Sensitivity of the nanotube chemical sensors at the onset of Poole-Frenkel conduction,” *Applied Physics Letters*, 96 (2010) 163110.
10. **J. Yeom** and M.A. Shannon, “Detachment lithography of photosensitive polymers: a route to fabricating three dimensional structures,” (**selected as a cover image**) *Advanced Functional Materials*, 20 (2010) 289-295.
9. J.-H. Han, **J. Yeom**, D. Joe, R.I. Masel, and M.A. Shannon, “Solid surface energy approach and AFM verification of (CF)_n treated surface effect and its correlation to adhesion reduction in microvalves,” *Journal of Micromechanics and Microengineering*, 19 (2009) 085017.
8. **J. Yeom**, D.D. Agonafer, J.-H. Han, and M.A. Shannon, “Low Reynolds number flow across an array of cylindrical microposts in a microchannel and figure-of-merit analysis of micropost-filled microreactors,” *Journal of Micromechanics and Microengineering*, 19 (2009) 065025.
7. **J. Yeom**, C.R. Field, B. Bae, R.I. Masel, and M.A. Shannon, “Design, fabrication, and characterization of a Si microheater for an integrated MEMS gas preconcentrators,” *Journal of Micromechanics and Microengineering*, 18 (2008) 125001.
6. S. Prakash, **J. Yeom**, N. Jin, I. Adesida, and M.A. Shannon, “Characterization of ionic transport at the nanoscale,” *Journal of Nanoengineering and Nanosystems*, 220 (2006) 45-52.
5. B. Bae, **J. Yeom**, B.R. Flachsbar, M.A. Shannon, “A sensorless and versatile temperature-control system for MEMS microheaters,” *Trans. Korean Institute Electrical Engineers C*, 55 (2006) 544-547.
4. **J. Yeom**, R.S. Jayashree, C. Rastogi, M.A. Shannon, and P.J.A. Kenis, “Passive direct formic acid microfabricated fuel cells,” *Journal of Power Sources*, 160 (2006) 1058-1064.
3. R.S. Jayashree, J.S. Spendelow, **J. Yeom**, C. Rastogi, M.A. Shannon, and P.J.A. Kenis, “Characterization and application of electrodeposited Pt, Pt/Pd, and Pd catalyst structures for direct formic acid micro fuel cells,” *Electrochimica Acta* 50 (2005) 4674-4682.
2. **J. Yeom**, Y. Wu, J.C. Selby, and M.A. Shannon, “Maximum achievable aspect ratio in deep reactive ion etching of silicon due to aspect ratio dependent transport and the micro-loading effect,” *Journal of Vacuum Science Technology B* 23 (2005) 2319-2329.
1. **J. Yeom**, G.Z. Mozsgai, B.R. Flachsbar, E.R. Choban, A. Asthana, M.A. Shannon, and P.J.A. Kenis, “Fabrication and characterization of a silicon-based millimeter-scale, microfabricated PEM fuel cell operating with gaseous hydrogen, methanol, or formic acid as fuels,” *Sensors and Actuators B* 107 (2005) 882-891.

Peer-reviewed Conference Proceedings Papers (*corresponding author, +equal contribution, ‡Yeom’s students):

33. T. Do, X. Huang, H. Suen, Y. Zhang, T. J. Bauder, H. Chung, P. Kwon, and **J. Yeom***, "Electrical Property Control of 3D Printed Stainless Steel 420 Structures Using Chemically Induced Sintering," *World Congress on Micro and Nano Manufacturing*, Portoroz, Slovenia, September 18-20, 2018.
32. H. Suen, D. Nguyen, T. Bauder, S. Vemulapalli, **J. Yeom**, D. Stephenson, and P. Kwon, "Implication of New Nozzle Designs via Additive Manufacturing on Minimum Quantity Lubrication Process," *International Symposium on Precision Engineering and Sustainable Manufacturing (PRESM2018)*, Sapporo, Japan, July 3-7, 2018.
31. T. Do, T.J. Bauder, K. Rego, H. Suen, **J. Yeom**, and P. Kwon, "Additively manufactured full-density stainless steel 316 with binder jet printing," *Proceedings of the ASME 2018 International Manufacturing Science and Engineering Conference*, MSEC2018-6681, pp. V001T01A017, College Station, TX, USA, June 18-22, 2018.
30. Y. Zhang, D.C. Ratchford, R.J. Anthony, and **J. Yeom***, "ZnO Nanowire and Silicon Nanocrystal Heterostructures for Photocatalytic Applications," *The 17th IEEE International Conference on Nanotechnology (IEEE NANO 2017)*, Pittsburgh, PA, USA, July 25-28, 2017, pp.873-876.
29. A. Mehboudi† and **J. Yeom***, "Numerical Simulation of Hybrid Hydrodynamic-Electrostatic Ionic Field Effect Transistor," *The 29th IEEE International Conference on Nano/Micro Engineered and Molecular Systems*, ULCA, Los Angeles, CA, USA, April 9-12, 2017.
28. Y. Zhang‡ and **J. Yeom***, "Pollutant-degrading Multifunctional Micromotors," *The 29th IEEE International Conference on Nano/Micro Engineered and Molecular Systems*, ULCA, Los Angeles, CA, USA, April 9-12, 2017.
27. K. Asadi, S. Peshin‡, **J. Yeom.**, and H. Cho, "Experimental and theoretical studies of nonlinear resonances in a Si microcantilever constrained by polymer attachment", *ASME 2016 International Design Engineering Technical Conferences (IDETC2016)*, Charlotte, NC, August 21-24, 2016.
26. T. Do, C. Shin‡, P. Kwon, and **J. Yeom***, "Fabrication of Powder-based Ceramic Micro-burners," *Procedia Manufacturing, NAMRC*, Blacksburg, VA, USA, June 28-31, 2016.
25. X. Huang‡, M. Bjork‡, J. Kim‡, and **J. Yeom***, "Decoupling of diameter and pitch in nanostructure arrays made by colloidal self-assembly," *The 29th IEEE International Conference on MEMS*, Shanghai, China, January 24-28, 2016.
24. K.D Cole, F. de Monte, R.L. McMasters, K.A. Woodbury, **J. Yeom**, J. Beck, "Applications in Education for a Heat Conduction Database," *Proceedings of the ASME 2015 International Mechanical Engineering Congress and Exposition*, Houston, Texas, November 13-19, 2015.
23. V.V. Swaminathan, S. Gannavaram, S. Li, H. Hu, **J. Yeom**, Y. Wang, L. Zhu, "Microfluidic Platform with Hierarchical Micro/Nanostructures and SELEX Nucleic Acid Aptamer Coating for Isolation of Circulating Tumor Cells," *13th IEEE International Conference on Nanotechnology*, Beijing, China, August 5-8, 2013.
22. B. Bae, J. Kim, **J. Yeom**, Q. Chen, C. Ray, and M. Shannon, "Development of a portable gas analyzer using a micro-Gas Chromatography/Flame Ionization Detector (micro-GC/FID) for NASA's environmental missions," *AIAA 42nd International Conference on Environmental Systems (ICES)*, San Diego, CA, July 15-19, 2012.
21. A. Tamayol, **J. Yeom**, K. Hooman, and M. Akbari, "Moderate Reynolds number flow through microchannels filled with arrays of micro-cylinders," *ECI Porous Media and Its Applications in Science, Engineering and Industry IV*, Potsdam, Germany, June 17-22, 2012.
20. H. Hu, **J. Yeom**, G. Mensing, Y. Chen, W.P. King, and M.A. Shannon, "Large area nanolithography on curved surfaces using a flexible nano-aperture array", *Technologies for Future Micro-Nano Manufacturing*, August 8-10, 2011.
19. **J. Yeom** and M.A. Shannon, "Detachment lithography: Fabrication of 3D microstructures and guided-assembly of nanomaterials," *Hilton Head 2010: A Solid State Sensor, Actuator, and Microsystems Workshop*, June 6-10, 2010 (Oral presenter).
18. N. Kroodsma, L. Zhu, **J. Yeom**, M. A. Shannon, D.D. Meng, "A fully-enclosed micro PEM fuel cell with self-regulated fuel delivery and shut-down," *PowerMEMS 09*, Washington DC, Dec. 1-4, 2009, pg. 9-12.
17. L. Zhu, D. Meng, N. Kroodsma, **J. Yeom**, M. A. Shannon, "An integrated microfluidic self-regulating and self-circulating hydrogen generator for fuel cells," *Transducers 09*, (The 15th International Conference on Solid-state Sensors, Actuators, and Microsystems), Denver, CO, USA, June 10-14, 2009.
16. B. Bae, A.D. Radadia, J.-H. Han, **J. Yeom**, R.I. Masel, and M.A. Shannon, "Feasibility test of fast micro gas chromatography system using five microvalves and a microcolumn," *Hilton Head 2008: A Solid State Sensor, Actuator and Microsystems Workshop*, June 1-5, 2008
15. **J. Yeom**, I. Oh, Z. Ni, B. Bae, C. Field, J. Han, R.I. Masel, and M.A. Shannon, "Enhanced toxic gas detection using a MEMS preconcentrator coated with the metal organic framework adsorber," *IEEE MEMS 2008*, Jan 13-17, 2008. (Poster presenter)
14. B. Bae, **J. Yeom**, R.I. Masel, and M.A. Shannon, "A five-microvalve fully integrated preconcentrator," *IEEE Sensors 2007*, Atlanta, Georgia, USA, Oct 28-31, 2007.
13. J.-H. Han, **J. Yeom**, J. Lee, R.I. Masel, and M.A. Shannon, "Smooth contact mode capacitive pressure sensor with polyimide diaphragm," *IEEE Sensors 2007*, Atlanta, Georgia, USA, Oct 28-31, 2007.

12. B. Bae, **J. Yeom**, A.D. Radadia, R.I. Masel, and M.A. Shannon, "A fully-integrated MEMS preconcentrator for rapid gas sampling," *Transducers '07*, (The 14th International Conference on Solid-state Sensors, Actuators, and Microsystems), Lyon, France, June 10-14, 2007.
11. **J. Yeom**, J.-H. Han, B. Bae, M.A. Shannon, and R.I. Masel, "Design and characterization of micropost-filled reactor to minimize pressure drop while maximizing surface-area-to-volume-ratio," *ASME Proceedings of IMECE 2006*, Nov. 5-10, Chicago, IL, USA. (Oral presenter)
10. S. Prakash, **J. Yeom**, and M.A. Shannon, "A microfabricated multilayer impedance system for ionic transport characterization in nanocapillary arrays," *ASME Proceedings of IMECE 2006*, Nov. 5-10, Chicago, IL, USA.
9. B. Bae, **J. Yeom**, B.R. Flachsbarth, Y. Tang, R.I. Masel, and M.A. Shannon, "A multi-purpose temperature control method for MEMS microheaters without separate temperature sensor," *ASME Proceedings of IMECE 2006*, Nov. 5-10, Chicago, IL, USA.
8. B.R. Flachsbarth, S. Prakash, **J. Yeom**, Y. Wu, G.Z. Mozsgai, Z.C. Leseman, K. Wong, C. Connell, E.J. Correa, M.R. Hansen, and M.A. Shannon, "Theory, fabrication, and characterization of MEMS devices: An interdisciplinary course for mechanical engineers," *ASME Proceedings of IMECE 2006*, Nov. 5-10, Chicago, IL, USA.
7. S. Prakash, **J. Yeom**, and M.A. Shannon, "A microfabricated impedance sensor for ionic transport in nanopores," *Hilton Head 2006: A Solid State Sensor, Actuator and Microsystems Workshop*, June 4-8, 2006.
6. Y. Tang, **J. Yeom**, J. Han, B. Bae, R.I. Masel, and M.A. Shannon, "A micro-post preconcentrator for a microscale gas chromatography system," *micro Total Analysis System 2005 Boston*, Oct 9-13, 2005.
5. **J. Yeom**, R. S. Jayashree, G. Z. Mozsgai, A. Asthana, E. R. Choban, M. Mitchell, P. J. A. Kenis, and M. A. Shannon, "A microscale vapor-fed formic acid fuel cell," *Hilton Head 2004: A Solid State Sensor, Actuator and Microsystems Workshop*, June 6-10, 2004. (Oral presenter)
4. R. S. Jayashree, **J. Yeom**, G. Z. Mozsgai, E. R. Choban, J. Spindelov, P. J. A. Kenis, and M. A. Shannon, "Palladium-nanoparticles on platinum-black catalysts integrated into a microfabricated Si-based micro-fuel cell," *Hilton Head 2004: A Solid State Sensor, Actuator and Microsystems Workshop*, June 6-10, 2004.
3. **J. Yeom**, Y. Wu, and M. A. Shannon, "Critical aspect ratio dependence in deep reactive ion etching of silicon," *Transducers '03*, (The 12th International Conference on Solid State Sensors, Actuators and Microsystems). Boston, MA, June 8-12, 2003. (Poster presenter)
2. G. Z. Mozsgai, , **J. Yeom**, B. R. Flachsbarth, M. A. Shannon, "A silicon microfabricated direct formic acid fuel cell," *Transducers '03*, (12th International Conference on Solid State Sensors, Actuators and Microsystems). Boston, MA, June 8-12, 2003.
1. **J. Yeom**, G.Z. Mozsgai, A. Asthana, B. R. Flachsbarth, P. Waszeczuk, E. R. Choban, P. J. A. Kenis, and M. A. Shannon, "A silicon microfabricated direct formic acid fuel cell," *First International Conference on Fuel Cell Science, Engineering and Technology*, Rochester, NY, April 21-23, 2003. (Oral presenter)

PROFESSIONAL TALKS AND POSTERS (C: Conference Talks/Posters, I: Invited Talks)

55. (C) M.J. Lefler, C. Rudolf, **J. Yeom**, C.T. Love, "Lithiation capabilities of bulk silicon at elevated temperature," ECS Meeting Abstract, MA2021-02, 99.
54. (C) D.C. Ratchford, V.M. Breslin, E.S. Ryland, **J. Yeom**, R.B. Balow, B.S. Simpkins, P.A. Brown, J.C. Owrutsky, A.D. Dunkelberger, "Impact of strain on 2D perovskite carrier dynamics," *SPIE Physical Chemistry of Semiconductor Materials and Interfaces XX* 11799, Virtual, August 2nd, 2021.
53. (I) **J. Yeom**, "Binder Jet Printing, Deformable Microfluidics, and Patterning via Strain Engineering," Materials Division, Naval Research Laboratory, Washington ,DC, January 4th, 2019.
52. (C) A. Mehboudi and **J. Yeom**, "Shallow deformable microfluidics: A passive Stokes flow rectifier for Newtonian fluids," *71st Annual Meeting of the APS Division of Fluid Dynamics*, Atlanta, GA, November 18-20, 2018.
51. (C) A. Mehboudi and **J. Yeom**, "Deformable shallow microfluidics: physics of the fluid flow and novel particle manipulation platform for filtration, isolation, and controlled release," *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Pittsburgh, PA, November 11-15, 2018.
50. (C) X. Huang, T. Do, T.J. Bauder, H. Suen, P. Kwon, and **J. Yeom**, "Additively manufactured sensors and heat exchangers for gas flow using novel binder jet processing," *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Pittsburgh, PA, November 11-15, 2018.
49. (C) A. Mehboudi and **J. Yeom**, "A passive Stokes flow rectifier for Newtonian fluids," *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Pittsburgh, PA, November 11-15, 2018.
48. (C) **J. Yeom**, J. Miao, C. Wang, "Air stable black phosphorus sensors for humidity detection," *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Pittsburgh, PA, November 11-15, 2018.
47. (C) **J. Yeom**, "Pollutant-Degrading Multifunctional Micromotors," *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Tampa, FL, November 5-9, 2017.

46. (C) **J. Yeom**, “Controlling the electrical properties of metal 3D-printed parts for efficient electrothermal conversion,” *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Tampa, FL, November 5-9, 2017.
45. (C) **J. Yeom**, “Soft Micromotors for Photodegradation,” *The 19th US-KOREA Conference on Science, Technology and Entrepreneurship (UKC)*, Civil and Environmental Engineering Symposium, Washington, DC, August 9-12, 2017.
44. (I) **J. Yeom**, “[INVITED] Property Control of Metal 3D Printed Parts Via Reactive Sintering Process,” *The 19th US-KOREA Conference on Science, Technology and Entrepreneurship (UKC)*, Mechanical, Aerospace and Naval Engineering Symposium, Washington, DC, August 9-12, 2017.
43. (C) K. Asadi, S. Peshin, **J. Yeom**, H. Cho, “Subharmonic and Combination Resonances of a Geometrically Nonlinear Microcantilever-polymer System,” *ASME International Design Engineering Technical Conferences (IDETC)*, Cleveland, OH, August 6-9, 2017.
42. (C) K. Asadi, J. Li, S. Peshin, **J. Yeom**, H. Cho, A Comprehensive Investigation on Nonlinear Resonance Behavior in an Intentionally Nonlinearized Microcantilever-Polymer System, *ASME International Design Engineering Technical Conferences (IDETC)*, Cleveland, OH, August 6-9, 2017.
41. (I) **J. Yeom**, “Integration of One-dimensional Nanostructures onto Flexible Substrates and Multifunctional Soft Microrobots,” *American Vacuum Society – Michigan Chapter 41st Spring Symposium: Nanomanufacturing: From Fundamentals to Scale-Up*, University of Michigan, Ann Arbor, MI, May 25, 2017.
40. (I) **J. Yeom**, “Immobilized ZnO Nanowire Array for Photodegradation and Multifunctional Soft Micromotors,” Mechanical Engineering Seminar Series, Columbus, Ohio State University, April 14, 2017.
39. (I) **J. Yeom**, “Soft Microbots: What are They and How Can They Help with Pollution?” *MSU Science Festival*, East Lansing, April 8th, 2017.
38. (C, I) **Y. Zhang** and **J. Yeom**, “Vertically-Aligned ZnO Nanowire Array on Transparent, Flexible Substrate for Photodegradation Applications,” *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Phoenix, AZ, Nov. 13-17, 2016.
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32. (C) K. Asadi, **S. Peshin**, **J. Yeom**, H. Cho, “Integration of intentional geometric nonlinearity for a broadband micro-mechanical resonator,” *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Montreal, Canada, Nov 16-20, 2014.
31. (C) **S. Peshin**, J. Kim, J. Gaumer, **J. Yeom**, “Chemical Sensors Based On Vertically-Aligned Silicon Nanowire Arrays With A Porous Electrode,” *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, Montreal, Canada, Nov 16-20, 2014.
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29. (I) **J. Yeom**, “Micro/Nanotechnology-Enabled Gas Sensing and Nanomanufacturing,” *IEEE Southeastern Michigan Fall Conference*, Sterling Heights, MI, Nov 13, 2014.
28. (I) **J. Yeom**, “Micro/Nanotechnology-Enabled Gas Sensing and Nanomanufacturing,” *Buckeye Micro-Nano Hour Seminar, Ohio State University*, Columbus, OH, May 21, 2014.
27. (C) **J. Yeom**, “Guided Self-Assembly of Nanomaterials Using Nanoporous Membrane and Detachment Lithography,” *ASME International Mechanical Engineering Congress and Exposition (IMECE)*, San Diego, CA, Nov 15-21, 2013.
26. (I) **J. Yeom**, “Scalable and Inexpensive Fabrication of Vertically-Aligned Silicon Nanowires for Sensing Applications,” Invited, *NRC-NRL Postdoc Colloquium*, July 24, 2013.
25. (C) P.E. Pehrsson, D. Ratchford, **J. Yeom**, S. Rose-Pehrsson, C. Tamanaha, C.R. Field, “Chemical Sensing with Silicon Nanowires in a Vertical Array with a Porous Electrode,” *TechConnect World Nanotech*, Washington, DC, May 12-16, 2013.

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18. (I) **J. Yeom**, "Nanofibrous sorbents for desulfurization applications," *Invited, Air Liquide*, Wilmington, DE, Oct 12, 2012.
17. (I) **J. Yeom**, "Micro/Nanotechnology-enabled gas adsorption, separation, and sensing for energy and environmental applications," *Invited, Department of Mechanical Engineering, Michigan State University*, June 12, 2012.
16. (I) **J. Yeom**, "Micro-gas chromatography analyzer enabled by micro/nanotechnology," *Invited, Naval Research Laboratory*, July 14, 2011.
15. (C) M. Behl, **J. Yeom**, and M.A. Shannon, "Nano-Structured Sorbents for Desulfurization of Biomass-Derived Syngas," *AIChE 2011 Spring meeting*, Chicago, IL, March 13-17, 2011.
14. (I) **J. Yeom**, "Micro-gas chromatography analyzer enabled by micro/nanotechnology," *Invited, Department of Mechanical Engineering, University of Akron*, Sept 8, 2010.
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6. (C) R.S. Jayashree, C. Rastogi, **J. Yeom**, M.A. Shannon, and P.J.A. Kenis, "Study of passive liquid and vapor feed formic acid and methanol fuel cells," *207th Meeting of The Electrochemical Society*, Quebec, Canada, May 16-18, 2005.
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- Topic Organizer (Nanomanufacturing in Advanced Manufacturing Track), American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (ASME IMECE 2016), Phoenix, AZ, Nov 11-17, 2016.
- Session Chair, Oral Session on Nanomanufacturing, American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (ASME IMECE 2016), Phoenix, AZ, Nov 11-17, 2016.
- Topic Organizer (Nanomanufacturing in Advanced Manufacturing Track), American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (ASME IMECE 2015), Houston, TX, Nov 13-19, 2015.
- Session Chair, Oral Session on Nanomanufacturing, American Society of Mechanical Engineers International Mechanical Engineering Congress & Exposition (ASME IMECE 2015), Houston, TX, Nov 13-19, 2015.
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