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EDUCATION

Stanford University	Ph.D. in Materials Science and Engineering <i>Advisor: Prof. Yi Cui</i>	2010-2016
National Tsing Hua University	B.S. in Materials Science and Engineering <i>Advisor: Prof. Lih-Juann Chen</i>	2003-2007

EXPERIENCE

Duke University	Assistant Professor Mechanical Engineering and Materials Science	2019-present
Stanford University	Postdoctoral Researcher <i>Advisor: Prof. Arun Majumdar</i>	2016-2018
Academia Sinica	Research Assistant <i>Advisor: Prof. Maw-Kuen Wu</i>	2008-2010

PROFESSIONAL SERVICES

Nano Letters	Early Career Board	2020-present
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AWARDS & HONORS

NSF CAREER	2022
Sony Faculty Innovation Award	2019, 2021
Ralph E. Powe Junior Faculty Enhancement Award	2021
MIT Technology Review, Innovators Under 35 (TR35) (China)	2020
Clarivate Analytics Highly Cited Researchers	2019-2021
Top Ten World-Changing Ideas by Scientific American	2016
MRS Graduate Student Silver Award	2015
International Fulbright Science and Technology Award	2010
Studying Abroad Scholarship, by ROC Ministry of Education	2010
Outstanding College Youth, by China Youth Corps	2006
Tsinghua University Academic Exchange Scholarship	2005
The Academic Achievement Award	2004
Taiwan Semiconductor Manufacturing Company (TSMC) Scholarship	2004

PUBLICATIONS (*corresponding authors, †equal contribution)

(Total published: 61 H-index: 43 Total citations: >16,000 Google Scholar: [goo.gl/icmTfi](https://scholar.google.com/citations?user=goo.gl/icmTfi))

- 61 C. Sui†, Y.-Y. Li†, X. Li, G. Higueros, K. Wang, W. Xie, P.-C. Hsu “Bio-inspired computational design of vascularized electrodes for high-performance fast-charging batteries optimized by deep learning” *Advanced Energy Materials* (2022) DOI: 10.1002/aenm.202103044

- 60 X. Li†, B. Ma†, J. Dai†, C. Sui, D. Pande, D. R. Smith, L. C. Brinson*, P.-C. Hsu* “Metalized polyamide heterostructure as a moisture-responsive actuator for multimodal adaptive personal heat management” *Science Advances* (2021) DOI: 10.1126/sciadv.abj7906
Highlighted in Duke Daily
- 59 Y. Rao†, J. Dai†, C. Sui†, Y.-T. Lai†, Z. Li, H. Fang, X. Li, W. Li, P.-C. Hsu* “Ultra-Wideband Transparent Conductive Electrode for Electrochromic Synergistic Solar and Radiative Heat Management” *ACS Energy Letters* (2021) DOI: 10.1021/acseenergylett.1c01486
Highlighted in ASME News
- 58 X. Li*, T. Cooper, W. Xie, P.-C. Hsu* “Design and utilization of infrared light for interfacial solar water purification” *ACS Energy Letters* (2021) DOI: 10.1021/acseenergylett.1c00869
- 57 H. Fang, W. Xie, X. Li, K. Fan, Y.-T. Lai, B. Sun, S. Bai, W. J. Padilla, P.-C. Hsu* “A triple-mode midinfrared modulator for radiative heat management of objects with various emissivity” *Nano Letters* (2021) DOI: 10.1021/acs.nanolett.1c01147
- 56 P.-C. Hsu*, X. Li “Photon-engineered radiative cooling textiles” *Science* (2020) DOI: 10.1126/science.abe4476
Highlighted in Science Podcast & Science Facebook Live
- 55 X. Li, B. Sun, C. Sui, A. Nandi, H. Fang, Y. Peng, G. Tan*, P.-C. Hsu* “Integration of daytime radiative cooling and solar heating for year-round energy saving in buildings” *Nature Communications* (2020) DOI: 10.1038/s41467-020-19790-x
Highlighted in Materials Today
- 54 X. Li, W. Xie, C. Sui, P.-C. Hsu* “Multispectral Thermal Management Designs for Net-Zero Energy Buildings” *ACS Materials Letters* (2020) DOI: 10.1021/acsmaterialslett.0c00322
- 53 Y.-T. Lai, Y.-S. Huang, C.-H. Chen, Y.-C. Lin, H.-T. Jeng, M.-C. Chang, L.-J. Chen, C.-Y. Lee, P.-C. Hsu*, N.-H. Tai*. “Green Treatment of Phosphate from Wastewater Using a Porous Bio-Templated Graphene Oxide/MgMn-Layered Double Hydroxide Composite” *IScience* (2020) DOI: 10.1016/j.isci.2020.101065
- 52 H. Fang, H. Guo, Y. Hu, Y. Ren, P.-C. Hsu, S.-L. Bai*. “In-situ grown hollow Fe₃O₄ onto graphene foam nanocomposites with high EMI shielding effectiveness and thermal conductivity” *Composites Science and Technology* (2020) DOI: 10.1016/j.compscitech.2019.107975
- 51 C. Liu, Y. Li, D. Lin, P.-C. Hsu, B. Liu, G. Yan, T. Wu, Y. Cui, S. Chu “Lithium Extraction from Seawater through Pulsed Electrochemical Intercalation” *Joule* (2020) DOI: 10.1016/j.joule.2020.05.017
- 50 J. Xu, C. Liu, P.-C. Hsu, J. Zhao, T. Wu, J. Tang, K. Liu, Y. Cui. “Remediation of heavy metal contaminated soil by asymmetrical alternating current electrochemistry” *Nature Communications*, 2019, 10:2440
- 49 C. Liu, T. Wu, P.-C. Hsu, J. Xie, J. Zhao, K. Liu, J. Sun, J. Xu, J. Tang, Z. Ye, D. Lin, Y. Cui. “Direct/Alternating Current Electrochemical Method for Removing and Recovering Heavy Metal from Water Using Graphene Oxide Electrode” *ACS nano*, 2019, 13(6), 6431-6437

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- 48 P.-C. Hsu, A.Y. Song, P. B. Catrysse, C. Liu, Y. Peng, J. Xie, S. Fan, Y. Cui “Radiative human body cooling by nanoporous polyethylene textile” *Science* (2016) DOI: 10.1126/science.aaf5471
Highlighted in Scientific American, C&E News, ABC News

- 47 P.-C. Hsu, C. Liu, A.Y. Song, Z. Zhang, Y. Peng, J. Xie, K. Liu, C.-L. Wu, P.B. Catrysse, L. Cai, S. Zhai, A. Majumdar, S. Fan, Y. Cui. “Dual-mode textile for human body radiative heating and cooling” *Science Advances* (2017) DOI: 10.1126/sciadv.1700895
Highlighted in Science
- 46 L. Cai, A.Y. Song, W. Li, P.-C. Hsu, D. Lin, P.B. Catrysse, Y. Liu, Y. Peng, J. Chen, H. Wang, J. Xu, A. Yang, S. Fan, Y. Cui. “Spectrally selective nanocomposite textile for outdoor personal cooling” *Advanced Materials*, 2018, 30(35), 1802152
- 45 K. Liu†, C. Liu†, P.-C. Hsu, J. Xu, B. Kong, T. Wu, R. Zhang, G. Zhou, W. Huang, J. Sun, Y. Cui. “Core–Shell Nanofibrous Materials with High Particulate Matter Removal Efficiencies and Thermally Triggered Flame Retardant Properties” *ACS Central Science*, 2018, 4(7), 894-898
- 44 R. Zhang, C. Liu, G. Zhou, J. Sun, N. Liu, P.-C. Hsu, H. Wang, Y. Qiu, J. Zhao, T. Wu, W. Zhao, Y. Cui. “Morphology and property investigation of primary particulate matter particles from different sources” *Nano Research*, 2018, 11(6), 3182–3192
- 43 Y. Peng†, J. Chen†, A.Y. Song†, P.B. Catrysse†, P.-C. Hsu, L. Cai, B. Liu, Y. Zhu, G. Zhou, D.S. Wu, H.R. Lee, S. Fan, Y. Cui. “Nanoporous polyethylene microfibrils for large-scale radiative cooling fabric” *Nature Sustainability*, 2018, 1, 105-122
- 42 R. Zhang, B. Liu, A. Yang, Y. Zhu, C. Liu, G. Zhou, J. Sun, P.-C. Hsu, W. Zhao, D. Lin, Y. Liu, A. Pei, J. Xie, W. Chen, J. Xu, Y. Jin, T. Wu, X. Huang, Y. Cui. “In-situ investigation on the nanoscale capture and evolution of aerosols on nanofibers” *Nano Letters*, 2018, 18 (2), 1130–1138
- 41 L. Cai, A.Y. Song, P. Wu, P.-C. Hsu, Y. Peng, J. Chen, C. Liu, P.B. Catrysse, Y. Liu, A. Yang, C. Zhou, C. Zhou, S. Fan, Y. Cui. “Warming up human body by nanoporous metallized polyethylene textile” *Nature Communications*, 2017, 8:496
- 40 J. Xie, J. Zhao, Y. Liu, H. Wang, C. Liu, T. Wu, P.-C. Hsu, D. Lin, Y. Jin, Y. Cui. “Engineering the surface of LiCoO₂ electrodes using atomic layer deposition for stable high-voltage lithium ion batteries” *Nano Research*, 2017, 10(11), 3754–3764
- 39 J. Zhao, G. Zhou, K. Yan, J. Xie, Y. Li, L. Liao, Y. Jin, K. Liu, P.-C. Hsu, J. Wang, H.-M. Cheng, Y. Cui, “Air-stable and freestanding lithium alloy/graphene foil as an alternative to lithium metal anodes”, *Nature Nanotechnology*, 2017, 12, 993-999
- 38 A. Yang, L. Cai, R. Zhang, J. Wang, P.-C. Hsu, H. Wang, G. Zhou, J. Xu, Y. Cui. “Thermal management in nanofiber-based face mask” *Nano Letters*, 2017, 17 (6), 3506-3510
- 37 K. Liu, A. Pei, H.R. Lee, B. Kong, N. Liu, D. Lin, Y. Liu, C. Liu, P.-C. Hsu, Z. Bao, Y. Cui. “Lithium Metal Anodes with an Adaptive Solid-Liquid Interfacial Protective Layer” *J. Am. Chem. Soc.*, 2017, 139 (13), 4815-4820
- 36 C. Liu, P.-C. Hsu, J. Xie, J. Zhao, T. Wu, H. Wang, W. Liu, J. Zhang, S. Chu, Y. Cui. “A half-wave rectified alternating current electrochemical method for uranium extraction from seawater” *Nature Energy*, 2017, 2:17007
- 35 C. Liu, D. Kong, P.-C. Hsu, H. Yuan, H.-W. Lee, Y. Liu, H. Wang, S. Wang, K. Yan, D. Lin, A.B. Boehm, Y. Cui. “Rapid water disinfection using vertically aligned MoS₂ nanofilms and visible light” *Nature Nanotechnology*, 2016, 11, 1098-1104
Highlighted in Nature
- 34 Y. Qiu, W. Liu, W. Chen, W. Chen, G. Zhou, P.-C. Hsu, R. Zhang, Z. Liang, S. Fan, Y. Zhang, Y. Cui. “Efficient solar-driven water splitting by nanocone BiVO₄-perovskite tandem cells” *Science Advances*, 2016, 2, e1501764
- 33 R. Zhang, C. Liu, P.-C. Hsu, C. Zhang, N. Liu, J. Zhang, H. R. Lee, Y. Lu, Y. Qiu, S. Chu, Y. Cui. “Nanofiber air filters with high temperature stability for efficient PM_{2.5} removal from the pollution sources” *Nano Letters*, 2016, 16 (6), 3642-3649

- 32 J. Xu†, C. Liu†, P.-C. Hsu, K. Liu, Y. Liu, Y. Cui. “Roll-to-roll transfer of electrospun nanofiber film for high-efficiency transparent air filter” *Nano Letters*, 2016, 16 (2), 1270-1275
- 31 Z. Chen, P.-C. Hsu, J. Lopez, Y. Li, J. To, N. Liu, C. Wang, S. Andrews, Y. Cui, Z. Bao. “Fast and reversible thermoresponsive polymer switching for safer batteries” *Nature Energy*, 2016, 1:15006
- 30 K. Yan, Z. Lu, H.-W. Lee, F. Xiong, P.-C. Hsu, Y. Li, J. Zhao, S. Chu, Y. Cui. “Selective deposition and stable encapsulation of lithium through heterogeneous seeded growth” *Nature Energy*, 2016, 1:16010
- 29 D. Lin, W. Liu, Y. Liu, H.R. Lee, P.-C. Hsu, K. Liu, Y. Cui. “High ionic conductivity of composite solid polymer electrolyte via in situ synthesis of monodispersed SiO₂ nanospheres in poly(ethylene oxide)” *Nano Letters*, 2016, 16 (1), 459-465
- 28 B. Deng†, P.-C. Hsu†, G. Chen, B.N. C, L. Liao, Z. Ayitimuda, J. Wu, Y. Guo, L. Lin, Y. Zhou, M. Aisijiang, Q. Xie, Y. Cui, Z. Liu, H. Peng. “Roll-to-roll encapsulation of metal nanowires in graphene and plastic substrate for high-performance flexible transparent electrodes” *Nano Letters* (2015) DOI: 10.1021/acs.nanolett.5b01531
- 27 P.-C. Hsu, X. Liu, C. Liu, X. Xie, H.R. Lee, A.J. Welch, T. Zhao, Y. Cui. “Personal thermal management by metallic nanowire-coated textile” *Nano Letters* (2015) DOI: 10.1021/nl5036572
Highlighted in Nature Nanotechnology, Science, The Wall Street Journal, Popular Science
- 26 C. Liu†, P.-C. Hsu†, H.W. Lee, M. Ye, G. Zheng, N. Liu, W. Li, Y. Cui. “Transparent air filter for high-efficiency PM_{2.5} capture” *Nature Communications* (2015) DOI: 10.1038/ncomms7205
Highlighted in Stanford News, The Wall Street Journal
- 25 N. Liu, K. Kim, H.Y. Jeong, P.-C. Hsu, Y. Cui, Z. Bao. “Effect of chemical structure on polymer-templated growth of graphitic nanoribbons” *ACS Nano*, 2015, 9 (9), 9043-9049
- 24 H. Wang, H.-W. Lee, Y. Deng, Z. Lu, P.-C. Hsu, Y. Liu, D. Lin, Y. Cui. “Bifunctional non-noble metal oxide nanoparticle electrocatalysts through lithium-induced conversion for overall water splitting” *Nature Communications*, 2015, 6:7621
- 23 Z. Liang, G. Zheng, C. Liu, N. Liu, W. Li, K. Yan, H. Yao, P.-C. Hsu, S. Chu, Y. Cui. “Polymer nanofiber-guided uniform lithium deposition for battery electrodes” *Nano Letters*, 2015, 15 (5), 2910-2916
- 22 W. Liu, N. Liu, J. Sun, P.-C. Hsu, Y. Li, H.W. Lee, Y. Cui. “Ionic conductivity enhancement of polymer electrolytes with ceramic nanowire fillers” *Nano Letters*, 2015, 15 (4), 2740-2745
- 21 D. Lin, Z. Lu, P.-C. Hsu, H.R. Lee, N. Liu, J. Zhao, H. Wang, C. Liu, Y. Cui. “A high tap density secondary silicon particle anode fabricated by scalable mechanical pressing for lithium-ion batteries”, *Energy Environ. Sci.*, 2015, 8, 2371
- 20 Y. Liu, H. Wang, D. Lin, C. Liu, P.-C. Hsu, W. Liu, W. Chen, Y. Cui. “Electrochemical tuning of olivine-type lithium transition-metal phosphates as efficient water oxidation catalysts” *Energy Environ. Sci.*, 2015, 8, 1719-1724
- 19 X. Xie, M. Ye, C. Liu, P.-C. Hsu, C.S. Criddle, Y. Cui. “Use of low cost and easily regenerated Prussian Blue cathodes for efficient electrical energy recovery in a microbial battery” *Energy Environ. Sci.*, 2015, 8, 546-551
- 18 P.-C. Hsu, D. Kong, S. Wang, H. Wang, A.J. Welch, H. Wu, Y. Cui. “Electrolessly deposited electrospun metal nanowire transparent electrodes” *JACS* (2014) DOI: 10.1021/ja505741e
- 17 N. Liu, K. Kim, P.-C. Hsu, A.N. Sokolov, F.L. Yap, H. Yuan, Y. Xie, H. Yan, Y. Cui, H.Y. Hwang, Z. Bao. “Large-scale production of graphene nanoribbons from electrospun polymers” *J. Am. Chem. Soc.*, 2014, 136 (49), 17284-17291

- 16 H. Wang, Q. Zhang, H. Yao, Z. Liang, H.W. Lee, P.-C. Hsu, G. Zheng, Y. Cui. “High electrochemical selectivity of edge versus terrace sites in two-dimensional layered MoS₂ materials” *Nano Letters*, 2014, 14 (12), 7138-7144
- 15 A. Wangperawong, P.-C. Hsu, Y. Yee, S.M. Herron, B.M. Clemens, Y. Cui, S.F. Bent. “Bifacial solar cell with SnS absorber by vapor transport deposition” *Appl. Phys. Lett.*, 2014, 105, 173904
- 14 Z.W. Seh, J.H. Yu, W. Li, P.-C. Hsu, H. Wang, Y. Sun, H. Yao, Q. Zhang, Y. Cui. “Two-dimensional layered transition metal disulphides for effective encapsulation of high-capacity lithium sulphide cathodes” *Nature Communications*, 2014, 5:5017
- 13 Z. Lu, H. Wang, D. Kong, K. Yan, P.-C. Hsu, G. Zheng, H. Yao, Z. Liang, X. Sun, Y. Cui. “Electrochemical tuning of layered lithium transition metal oxides for improvement of oxygen evolution reaction” *Nature Communications*, 2014, 5:4345
- 12 H. Yao†, G. Zheng†, P.-C. Hsu, D. Kong, J.J. Cha, W. Li, Z.W. Seh, M.T. McDowell, K. Yan, Z. Liang, V.K. Narasimhan, Y. Cui. “Improving lithium–sulphur batteries through spatial control of sulphur species deposition on a hybrid electrode surface” *Nature Communications*, 2014, 5:3943
- 11 Z.W. Seh, H. Wang, P.-C. Hsu, Q. Zhang, W. Li, G. Zheng, H. Yao, Y. Cui. “Facile synthesis of Li₂S–polypyrrole composite structures for high-performance Li₂S cathodes” *Energy Environ. Sci.*, 2014, 7, 672-676
- 10 P.-C. Hsu†, S. Wang†, H. Wu, V.K. Narasimhan, H.Y. Lee, Y. Cui. “Performance enhancement of metal nanowire transparent conducting electrodes by mesoscale metal wires” *Nature Communications* (2013) DOI: 10.1038/ncomms3522
- 9 H. Wang, Z. Lu, S. Xu, D. Kong, J.J. Cha, G. Zheng, P.-C. Hsu, K. Yan, D. Bradshaw, F.B. Prinz, Y. Cui. “Electrochemical tuning of vertically aligned MoS₂ nanofilms and its application in improving hydrogen evolution reaction” *PNAS*, 2013, 110 (49), 19701-19706
- 8 X. Xie, M. Ye, P.-C. Hsu, N. Liu, C.S. Criddle, Y. Cui. “Microbial battery for efficient energy recovery” *PNAS*, 2013, 110 (40), 15925-15930
- 7 H. Wu, D. Kong, Z. Ruan, P.-C. Hsu, S. Wang, Z. Yu, T.J. Carney, L. Hu, S. Fan, Y. Cui. “A transparent electrode based on a metal nanotrough network” *Nature Nanotechnology*, 2013, 8 (6), 421-425
- 6 Z.W. Seh, W. Li, J.J. Cha, G. Zheng, Y. Yang, M.T. McDowell, P.-C. Hsu, Y. Cui. “Sulphur–TiO₂ yolk–shell nanoarchitecture with internal void space for long-cycle lithium–sulphur batteries” *Nature Communications*, 2013, 4:1331
- 5 P.-C. Hsu, H. Wu, T.J. Carney, M.T. McDowell, Y. Yang, E.C. Garnett, M. Li, L. Hu, Y. Cui. “Passivation coating on electrospun copper nanofibers for stable transparent electrodes” *ACS Nano* (2012) DOI: 10.1021/nn300844g
- 4 T.-W. Huang, C.-M. Lin, H.-S. Sheu, T.-L. Hung, K.-W. Yeh, P.-C. Hsu, Y.-L. Huang, F.-C. Hsu, M.-K. Wu, “Raman and X-ray diffraction studies of superconducting FeSe under pressure”, *Physica C: Superconductivity*, 2010, 470, S502-S503
- 3 C.-C. Chang, J.-Y. Luo, T.-K. Chen, K.-W. Yeh, T.-W. Huang, C.-H. Hsu, W.-H. Chao, C.-T. Ke, P.-C. Hsu, M.-J. Wang, M.-K. Wu. “Pulsed laser deposition of (MoO₃)_{1-x}(V₂O₅)_x thin films: preparation, characterization and gasochromic studies” *Thin Solid Films*, 2010, 519 (5), 1552-1557
- 2 T.-K. Chen, J.-Y. Luo, C.-T. Ke, H.-H. Chang, T.-W. Huang, K.-W. Yeh, C.-C. Chang, P.-C. Hsu, C.-T. Wu, M.-J. Wang, M.-K. Wu. “Low-temperature fabrication of superconducting FeSe thin films by pulsed laser deposition” *Thin Solid Films*, 2010, 519 (5), 1540-1545
- 1 Y.-C. Chang, W.-C. Yang, C.-M. Chang, P.-C. Hsu, and L.-J. Chen, “Controlled Growth of ZnO Nanopagoda Arrays with Varied Lamination and Apex Angles”, *Cryst. Growth Des.*, 2009, 9 (7), 3161-3167

PATENTS

1. P.-C. Hsu, X. Li “A dual-mode device for energy saving of building” WO 2021/113332
2. P.-C. Hsu, L.C. Brinson, X. Li, B. Ma “Multimodal metallization systems for thermoregulation and methods thereof” US Provisional Patent Application 63/278,305
3. P.-C. Hsu, Y. Rao, C. Sui “System for dual-mode solar heating and radiative cooling” US Provisional Patent Application 63/256,136
4. P.-C. Hsu, H. Fang “Radiative thermal managing device” US Provisional Patent Application 63/120,941

Before Duke

5. **(Licensed)** P.-C. Hsu, A.Y. Song, P.B. Catrysse, Y. Peng, S. Fan, Y. Cui. “Infrared-transparent porous polymer textile for human body cooling and heating” WO 2017143222 A1
6. **(Licensed)** P.-C. Hsu, A.Y. Song, P.B. Catrysse, Y. Peng, J. Chen, S. Fan, Y. Cui. “Infrared-transparent, polymer fiber-based woven textiles for human body cooling” WO 2018058062 A1
7. **(Licensed)** C. Liu, P.-C. Hsu, R. Zhang, S. Chu, Y. Cui. “Transparent air filter for high-efficiency PM_{2.5} capture” WO 2016094906 A1
8. P.-C. Hsu, A.Y. Song, W. Li, L. Cai, S. Fan, Y. Cui. “Spectrally selective textile for passive radiative outdoor personal cooling” WO 2019152952A1
9. P.-C. Hsu, S. Wang, H. Wu, Y. Cui. “Transparent conducting electrodes comprising mesoscale metal wires” US 20150056435 A1

TALKS & CONFERENCES

2022

1. SPIE Photonic West

2021

2. MRS Fall 2021
3. **(Invited)** MRS-T International Conference
4. SPIE Optics + Photonics
5. CLEO 2021
6. **(Invited)** UCLA MSE, Department seminar
7. MRS Spring 2021
8. **(Invited)** NC State University, Textile Engineering, Department seminar
9. **(Invited)** UNC Chapel Hill, Applied Physical Sciences, Department seminar

2020

10. **(Invited)** Project Tyra (Taiwanese Young Research Association)
11. **(Invited)** Triangle Hard Matter Workshop
12. **(Invited)** AAAS Science Facebook Live, 2020, “Cooling in a Warming World”
13. **(Invited)** MRS Fall 2020
14. IMECE 2020
15. **(Invited)** Techtexil North America 2020

2019

16. **(Invited)** Pratt Visiting Board, new faculty panel discussion

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17. **(Invited)** “Light-Managing Textiles for Energy Efficiency and Thermal Comfort” *e-Wear Symposium*, Stanford, CA, USA
18. “Radiative Human Body Cooling by Nanoporous Polyethylene Textile” *Materials Research Society Spring Meeting 2017*, Phoenix, AZ, USA
19. “Personal Thermal Management by Metallic Nanowire-Coated Textile” *Materials Research Society Spring Meeting 2017*, Phoenix, AZ, USA
20. **(Invited)** “Light-Managing Nanomaterials for Energy Efficiency” *Stanford-Chalmers Workshop on*

- Advancing Materials Innovatively 2016, Stanford, USA*
21. **(Invited)** “Metal Nanowire Transparent Electrodes” *International Conference on Materials for Advanced Technologies 2015*, Singapore
 22. “Electrolessly Deposited Metal Electrospun Nanowire Transparent Electrodes” *Materials Research Society Spring Meeting 2015*, San Francisco, CA, USA
 23. “Performance Enhancement of Metal Nanowire Transparent Conducting Electrodes by Mesoscale Metal Wires” *Materials Research Society Spring Meeting 2014*, San Francisco, CA, USA
 24. **(Invited)** “High Performance Metal Nanowire Transparent Electrodes” *Stanford Photonics Research Center Symposium 2014*, Stanford, CA, USA
 25. “Metal Nanowire Transparent Electrode” *Fulbright Science and Technology Capstone 2013*, Washington, DC, USA
 26. “High performance multiscale metal nanowire transparent electrode” *European Photovoltaic Solar Energy Conference 2013*, Paris, France
 27. “Electrolessly deposited electrospun metal nanofiber transparent electrodes” *Materials Research Society Fall Meeting 2013*, Boston, MA, USA
 28. “Metal Nanowire and Mesowire Network Transparent Electrodes” *Bay Area Photovoltaic Consortium 2013*, Berkeley, CA, USA