YUNSHAN EMILY WANG
Assistant Professor

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Professional Preparation

University of Notre Dame	Chemical and Biomolecular Engineering	Ph.D., 2015
Peking University (China)	Electrical Engineering and Computer Science	B.S., 2009

Appointments

2018-	Assistant Professor, Department of Chemical Engineering University of Utah
2018-	Adjunct Assistant Professor, Department of Electrical and Computer Engineering University of Utah
2017-2018	Research Assistant Professor, Department of Electrical and Computer Engineering, University of Utah
2015-2017	NSF MRSEC Postdoctoral Fellow University of Utah
2009-2015	Graduate Research Assistant, Department of Chemical and Biomolecular Engineering, University of Notre Dame

Journal Publications

22- Cheng X, **Wang Y**, *Enhanced ultraviolet absorption in graphene by aluminum and magnesium hole-arrays,* Scientific Reports, **11**, 8516 (2021)
21- Gopalan P, **Wang Y**, Sensale-Rodriguez B, *Terahertz characterization of two-dimensional low-conductive layers enabled by metal gratings*, Scientific Reports, **11**, 2833, (2021)
20- Lee JY, Cheng X and **Wang Y**, *Ultraviolet plasmonic enhancement of the native fluorescence of tryptophan on aluminum nano-hole arrays*, Journal of Physics D: Applied Physics, **54** 135107 (2021)
19-Cheng X, Lotubai E, Rodriguez M, **Wang Y**, *UV fluorescence enhancement by aluminum and magnesium equilateral bowtie nanoantennas,* OSA Continuum, 3, 3300-3313 (2020)
18- Moreira C, **Wang Y**, Blair S, Chadwick E, Lee JY, Oliveira L, Lima A, Cruz R, *Approaches for deep-ultraviolet surface plasmon resonance sensors*, Optics Letters, 45, 4642-4645 (2020).
17- Moreira C, **Wang Y**, Blair S, Carvalho I, Cruz R, *Aluminum-Based Deep-Ultraviolet Surface Plasmon Resonance Sensor*, Plasmonics, (2020).
16- Cooke J, Ghadbeigi L, Sun R, Bhattacharyya A, **Wang Y**, Scarpulla M, Krishnamoorthy S, and Sensale-Rodriguez B, *Synthesis and Characterization of Large-Area Nanometer-thin β-Ga2O3 Films from Oxide Printing of Liquid Metal Gallium*, Physica Status Solidi A: Applications and Materials Science, 217 (2020).
15- **Wang Y**, Dickens PT, Varley JB, Ni X, Lotubai E, Sprawls S, Liu F, Lordi V, Krishnamoorthy S, Blair S, Lynn KG, Scarpulla M and Sensale-Rodriguez, B, *Incident wavelength and polarization dependence of spectral shifts in β-Ga2O3 UV photoluminescence*, Scientific Report, 8, (2018)

14- Mao J, **Wang Y**, Appusamy K, Guruswamy S and Blair S, *Effect of Ga Implantation and Hole Geometry on Light Transmission through Nanohole Arrays in Al and Mg*. The Journal of Physical Chemistry C 122 , 10535-10544 (2018).
13- Zhang T, **Wang Y**, Appusamy S, Huang B, Wang J, Liu F, Blair S, Guruswamy S and Nahata *A. Gallium Platinum Alloys – A New Material System for UV Plasmonics*. Optical Material Express, 7, 2880, (2017). (Editor's highlight)
12- **Wang Y**, Peterson E, Appusamy S, Harris J, Guruswamy S and Blair S, *Magnesium as a Novel UV Plasmonic Material for Fluorescence Decay Rate Engineering in Free Solution.* The Journal of Physical Chemistry C, 121, 11650 (2017).
11- Egatz-Gomez A, Wang C, Klacsmann F, Pan Z, Marczak S, **Wang Y**, Sun G, Senapati S, Chang HC, *Future microfluidic and nanofluidic modular platforms for nucleic acid liquid biopsy in precision medicine.* Biomicrofluidics, 10, 032902 (2016).
10- Yan Y, **Wang Y**, Senapati S, Schiffbauer J, Yossifon G, and Chang HC, *Robust ion current oscillations under a steady electric field: An ion channel analog.* Phys. Rev. E, 94, 022613 (2016).
9- Jiao X, **Wang Y** and Blair S, *UV fluorescence enhancement by Al and Mg nanoapertures*. J. Phys. D: Appl. Phys., 48 184007 (2015).
8- **Wang Y**, Chang TC, Stoddart P and Chang HC, *Diffraction-limited Ultrasensitive Molecular Nano-Arrays With Singular Nano-Cone Scattering*. Biomicrofluidics, 8, 021101 (2014).
7- Liu S, Yan Y, **Wang Y**, Senapati S and Chang HC, *Plasmonic hotspots of dynamically assembled nanoparticles in nanopipettes: femtomolar molecular (miRNA) sensing*. Biomicrofluidics, 7, 061102 (2013).
6- **Wang Y**, Cheng X, Chang HC, *Celebrating Singularities: Mathematics and Chemical Engineering.* AIChE J, 59 1830 (2013) (Cover Featured)
5- **Wang Y**, Plouraboue F and Chang HC, *Broadband converging plasmon resonance at a conical nanotip*. Opt Express, 21 6609-6617 (2013)
4- **Wang Y**, Tan M.K, Go D.B and Chang HC, *Electrospray Cone-Jet Breakup and Droplet Production for Electrolyte Solutions.* Europhys. Lett. 99, 64003 (2012) (Editor's highlight).
3- Xie F, **Wang Y**, Wang W, Li Z, Yossifon G, and Chang HC, *Preparation of Rhombus-Shaped Micro/Nanofluidic Channels with Dimensions Ranging from Hundred Nanometers to Several Micrometers*, J. Nanosci. Nanotechnol. 10 7277 (2011).
2- Xie F, **Wang Y**, Wang W, Wu W, Li Z, Yossifon G, and Chang HC, *An experimental study on the side-opening filling process at the interface between microchannels with different widths*, Key Engineering Materials, 483, 293 (2011).
1- Chen Z, **Wang Y**, Wang W, and Li Z, *Nanofluidic Electrokinetics in Nanoparticle Crystal*, Appl. Phys. Lett. 95, 102105 (2009).

Invited talk
1-Wang Y, UV plasmonics for biosensing, SPIE Optics and Photonics, 2019

Conference Presentations
20- Lee, J-Y, Wang Y, In-Situ Monitoring with a Surface Plasmonic Enhanced Native Fluorescence in the Ultraviolet Spectral Region, AIChE, 2021 (Oral)
19 -Cooke J, Ghadbeigi L, Sun R, Bhattacharyya A, Wang Y, Scarpulla M, Krishnamoorthy S, Sensale-Rodriguez B, Large-area nanometer-thin β-Ga2O3 films synthesized via oxide printing of liquid metal gallium, SPIE Optics and Photonics 2020 (Oral)

18-Cheng X, Rodriguez M, Wang Y, Native fluorescence enhancement using an Aluminum bowtie nano-antenna, SPIE Optics and Photonics 2020 (Oral)
17-Lee J-Y, Wang Y, Fluorescence decay rate engineering using aluminum nanohole arrays, SPIE Optics and Photonics 2020 (Oral)
16-Lee J-Y, Wang Y, Aluminum Thin Film Enhanced Native Fluorescence for Biosensors in the UV Spectral Region, AIChE 2019 (Poster)
15-Cheng X, Wang Y, UV Surface Plasmon Resonance Modification by Graphene Pi Plasmon Resonance, AIChE 2019 (Oral)
14-Chen X, Wang Y, UV surface plasmon resonance modification by graphene Pi plasmon resonance, SPIE Optics and Photonics, 2019
13-Wang Y, UV fluorescence decay rate engineering by aluminum and magnesium bowtie antennas, SPP9, the 9th International Conference on Surface Plasmon Photonics, 2019 (Poster presentation)
12-Wang Y, Label free Biosensing enabled by UV plasmonic enhanced fluorescence, SPIE Photonics West, 2019 (Oral presentation)
11-Wang Y, Label free Biosensing enabled by UV plasmonic enhanced fluorescence. Targeted Nucleic Acid Detection and Delivery, 2018 (Oral Presentation).
10-Wang Y, Modification of UV Surface Plasmon Resonances in Aluminum Hole-Arrays with Graphene, CLEO, 2017 (Poster Presnetation).
9- Wang Y, UV fluorescence enhancement and lifetime modification by Al and Mg nanoaperture. NFO, 2016 (Oral presentation).
8- Wang Y, UV fluorescence enhancement and lifetime modification by Al and Mg nanoaperture. Optics and Photonics, 2016 (Oral presentation).
7- Wang Y, UV fluorescence lifetime modification by Al and Mg nanoaperture. SPP7, 2015 (Oral presentation).
6- Wang Y, Plasmonic nucleic acid sensing by target-induced nanoparticle self-assembly onto optical fiber cone arrays, 246th American Chemical Society National Meeting, 2013 (Oral presentation).
5- Wang Y, Nano-Cone Optical Fiber Array Sensors for MiRNA Profiling, SPIE Optics+Photonics, 2013 (Oral presentation).
4- Wang Y, Nucleic Acid Sensing by Target-Induced Nanoparticle Aggregation with Optical Fiber Cone Arrays AIChE Annual Meeting, 2012 (Oral presentation).
3- Wang Y, Emission and Charging of Nanoaerosol Plumes from a Taylor Cone-Jet, The Division of Fluid Dynamics of the American Physical Society, 2011(Oral presentation).
2- Wang Y, A Hybrid Nanoscale Biosensing Platform Based On Dielectrophoresis and Surface Plasmonics, AIChE Annual Meeting, 2011(Oral presentation).
1- Wang Y, Surface Plasmon Polaritons: Geometric Resonance at Singularities, APS March Meeting, 2011 (Oral presentation).

Patent

S Liu, S Senapati, Y Wang, Y Yan, HC Chang, "Method and apparatus for a nanopipette biosensor" (US Patent 9,856,518, 2018).

Teaching and Mentor Experiences

Instructor, University of Utah, Fall 2019, 2020, 2021

Ch En 3853 – Chemical Engineering Thermodynamics, junior required course, class size (60+)

Instructor, University of Utah, Spring 2019,2020,2021
Ch En 2800 - Fundamental of process engineering, sophomore required course, class size (50+)
Guest Instructor, University of Utah
Applied Electromagnetics – Spring 2017; Nanophotonics – Fall 2016; Microwave Engineering - Fall 2016, Fall 2018

Graduate Student Instructor, University of Notre Dame
Received 'Outstanding Graduate Student Teachers Award' from University of Notre Dame
Mathematics II - Spring 2013; Electrokinetics - Fall 2013
Teaching Assistant, University of Notre Dame, 2009-2012
Mathematics II - Spring 2009-2012; Biomedical Engineering Transport Phenomena - Fall 2009

Mentor
Ph.D. students:

- Xueling Cheng, Department of Electrical and Computer Engineering
- Ji-Young Lee, Department of Chemical Engineering

Service and Outreach Activities

External Service

1- Reviewer of manuscripts for: Biomicrofluidics (American Institute of Physics), SPIE optical engineering, Scientific report, IEEE Transactions on Nanotechnology, Sensors and Actuators A: PHYSICAL
2- Proposal review for: NSF CBET Nanoscale interactions, 2021, NSF CBET Nanoscale interactions, 2020, NSF ECCS 2019, ACS Petroleum Research Fund 2019, NIH ISD study section, 2021.
3- Section co-chair, Chemical Engineers in Medicine Topical Conference - Diagnostics, Treatments and Theranostics. AIChE, 2019
4- Program committee, UV and Higher Energy Photonics: From Materials to Applications 2021, SPIE Optics and Photonics, 2019-present

Internal Service

5- Chair of department safety committee, 2019- present
6- Member of Undergraduate Committee, 2019-present
7- Committee member of department qualify exam, May, August, 2020, January 2019, August 2018
8- Committee member of PhD thesis proposal, Tae Hwan Lim

Outreach Activities

9- Science fair mentor, Escalante Elementary School, Salt Lake City, UT, 2015
10- President, SPIE Student Chapter at Notre Dame, 2013

Honors

1- Outstanding Graduate Student teacher Award (University of Notre Dame) 2013
2- Fellowship, Center for Environmental Science and Technology - (University of Notre Dame), 2011
3- Fonder Scholarship for top 5% of the Microelectronics class – (Peking University) 2007