Yiping Zhao

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Google Scholar: https://cholar.google.com/citations?user=nYCk8JQAAAAJ
Research ID: https://www.webofscience.com/wos/author/record/A-4968-2008
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EDUCATION

Ph. D. in Physics **08/99** **Rensselaer Polytechnic Institute, Troy, NY**
Thesis: In-plane light scattering from fractal surfaces – principles and experiments
Advisors: Prof. T.-M. Lu and Prof. G.-C. Wang

MS in Physics **07/94** **Institute of Semiconductors, CAS, Beijing, China**
Thesis: A new method for detecting subtle changes in Si-H bonds of a-Si:H
Advisor: Prof. G. L. Kong

BS in Electronics **07/91** **Peking University, Beijing, China**
Thesis: A new method for acquiring high resolution atmospheric Rayleigh-Mie spectrum
Advisor: Prof. Y. F. Wu

PROFESSIONAL CAREER

1/20 – 3/20	SPARC Visiting Professor, Indian Institute of Technology – Delhi, India	
4/16 – present	Distinguished Research Professor of Physics	UGA
7/15–Present	Member, Biomedical & Health Sciences Institute, UGA	
7/14 – 7/16	Part Time Adjunct Professor, College of Physics, Jiangsu Normal University, Xuzhou, China	
4/12–Present	Member, Faculty of Infectious Diseases, University of Georgia	
3/12–Present	Member, UGA Obesity Initiative, University of Georgia	
7/12 – present	Courtesy Faculty, College of Engineering	UGA, Athens, GA
7/10 – present	Professor of Physics	UGA, Athens, GA
7/09 – 09/15	Director Nanoscale Science and Engineering Center, UGA, Athens, GA	
6/08 – 08/16	Founder Argent Diagnostic, Inc., Athens, GA	
4/08 – 7/10	Adjunct Associate Professor of Bio&Arg. Eng.	UGA, Athens, GA
7/07 – 7/10	Associate Professor of Physics	UGA, Athens, GA
8/02 – 6/07	Assistant Professor of Physics	The University of Georgia (UGA)
8/00 – 7/02	Research Assistant Professor	Rensselaer Polytechnic Institute, Troy, NY
8/99 – 7/00	Research Scientist	Rensselaer Polytechnic Institute, Troy, NY

EXPERIENCES

01/2016 to Present: Distinguished Research Professor of Physics – Research, Education, and Service.

Department of Physics and Astronomy, The University of Georgia, Athens, Georgia

07/2010 to Present: Professor of Physics – Research, Education, and Service.
Department of Physics and Astronomy, The University of Georgia, Athens, Georgia

- Nanofabrication: (1) Further expanded the structural and material design capability of glancing angle deposition (GLAD) for various applications; (2) Conducted fundamental studied on how deposition conditions affected the structure of resulting nanorod arrays for different materials systems; (3) Built and investigated a new combinatory nanofabrication technique based on GLAD for high throughput screening of nanomaterials; (4) Used the nanoparticle decorated nanorod arrays to achieve porous nanorod arrays.
- Understanding the AgNR based SERS: (1) Explored the effect of three-dimensional shapes of Silver nanorod array (AgNR), such as L-shape, zig-zag shape, helical shape, on the performance of the SERS; (2) Investigated the substrate deposition temperature effect on AgNR growth and SERS responses; (3) Studied the effect of surface coating of ultra-thin SiO_2 layer on AgNR substrates, or the replacement of Ag by Au; (4) Discovered the controllable and reversible hot spot formation in AgNR substrates.
- SERS based chemical and biological sensors: (1) Fabricated flexible AgNR substrates; (2) Designed an on-chip ultra-thin layer chromatography and SERS device to simultaneously separate and detect mixture specimens; (3) Significantly extended SERS based bacteria detection for food safety applications, achieved differentiation of 37 bacteria, detection and differentiation of bacteria from fresh produces as low as 100 CFU/ml using a handheld Raman device; (4) Expanded the SERS based sensor for detection of other harmful substance, such as aflatoxins, polycyclic aromatic hydrocarbons (PAHs), antibiotics, etc. as well as cancer biomarkers; (5) Developed a simple and rapid SARS-CoV-2 LSPR sensor (detection time < 20 minutes); (6) Developed several strategies for surface enhanced Raman spectroscopy (SERS) and deep learning based SARS-CoV-2 sensors with a detection time < 20 minutes and an accuracy > 97%; (3) Developed a SERS and machine learning diagnostics strategy to detect, differentiate, and quantify 13 different respiratory viruses from saliva.
- Gas sensor development: (1) Realized a highly sensitive NO_2 gas sensor based on oxide nanorod arrays; (2) Developed an ultra-sensitive and ultra-fast magneto-optical hydrogen sensor and an ultrafast resistant hydrogen sensor; (3) Established a perturbation theory to understand the change in LSPR response of graded composition nanoparticles, which is the theoretic basis for plasmonics based hydrogen sensors.
- Plasmonics and metamaterials: (1) Developed different strategies of combining nanosphere lithography and glancing angle deposition to fabricate various large area plasmonic structures and chiral metamaterials (fan-shape, helical, helically stacked, Swiss-roll, chiral-hole); (2) Proposed several strategies to improve the sensitivity of localized surface plasmon resonant (LSPR) sensors, including composite plasmonic structure, graded composition plasmonic structure, etc. (3) Conducted a systematic theoretic investigation to understand the relationship between the optical property and structure/morphology of GLAD plasmonic structures and chiral metamaterials; (4) Systematically investigated the fabrication, optical property, and application of plasmonic nanostructures made by composite metal alloys; (4) Investigated the magneto-optical properties of various plasmon-magnetic nanostructures and their composites.
- Catalytic nanomotors: (1) Systematically investigated the nanomotor structural parameter on the motion of catalytic nanomotors; (2) Designed different tube-like and shell like

catalytic nanomotors that propelled by bubble generation and bursting; (3) Conducted a systematical experimental and theoretical investigations on the generation, transport, growth, and burst of bubbles as the propulsion mechanism of catalytic nanomotors; (4) Explored the motion behavior of catalytic nanomotors in a confined channel.

- Magnetic micro-/nanomotors: (1) Discovered a new phenomenon in using a gradient alternating magnetic field to drive anisotropic shaped magnetic micro-/nano-motors to perform translational motion; (2) Conducted a detailed experimental and theoretical investigation on the mechanism of above effect; (3) Realized biological cell manipulation and assembly using anisotropic magnetic particles under programmable gradient alternating magnetic fields.
- Nanotechnology based stroke treatment: (1) Developed a new method to use drug-loaded magnetic nanoparticles and their rotation under a rotary magnetic field to treat stroke in brain. The method can reduce the drug dose 1/100 while accelerate the treatment three times; (2) Built numerical models to simulate the structure of blood clot and conducted a theoretical investigation of the mechanical property of blood clot networks.
- Photocatalyst development: (1) Explored the effects of doping, quantum dot or Ag nanoparticle decoration of TiO_2 nanorod arrays on the photocatalytic performance; (2) Tested the photocatalytic performance of complex oxides such as Bi_xW_yO, $CuBi_2O_4$, or other heterostructure oxide systems; (3) Examined the carrier dynamics of different oxide nanostructure systems using ultra-fast spectroscopy; (4) Developed several highly efficient antimicrobial materials, such as carbon dots, complex metal oxide particles, etc.
- Energy storage materials: (1) Constructed a theoretical model for hydrogenation/dehydrogenation process of Mg nanoblades; (2) Experimentally and theoretically conducted a systematic investigation on using different Si nanostructures (including Si-Cu heterostructure, Si-Cu composite, and graded Cu-Si) for Li ion battery electrode.
- SERS of 2D materials: Investigated the SERS spectroscopy of a monolayer of transition metal dichalcogenides.
- Innovation in physics education: (1) Incorporated smartphone-based optics projects in Introduction to Modern Optics class. A tutorial book entitled "*Use of Smartphones in Optical Experimentation*" has been resulted from this practice. (2) Developed smartphone based introductory physics labs, lab instructions, and worksheets. A YouTube channel entitled "*UGA SmartPhone Intro Physics Lab*" with instruction videos and lab worksheets has been created.

07/2014 to 07/2016: Part Time Adjunct Professor – Research and Education

- College of Physics, Jiangsu Normal University, Xuzhou, China
- Established a small cleanroom and other nanofabrication lab.
- Designed a dual-source GLAD system.
- Trained students and researchers to work on SERS.

07/2009 to 09/2015: Director – Education and Service.

Nanoscale Science and Engineering Center, The University of Georgia, Athens, Georgia

- Helped to design and build the first fabrication cleanroom and bio-cleanroom at UGA.
- Managed the routine operation of the center.
- Organized several local nano-bio conferences.
- Organized regular bio-nanotechnology seminars.

- Participated in new faculty search in related areas.
- Obtained two NSF educational based grants, one REU site and a NUE: UNITE.
- Helped to developed Nanotechnology based curriculum (PHYS 4800/6800; ENGR 8980).
- Established routine communications with local labs (USDA, SRNL) and industry (Poultry, Paper making company, …).
- Outreached to local high schools and other social clubs.

06/2008 to 08/2016: Founder – Research.
Argent Diagnostic, Inc., Athens, Georgia

- Took care of the scientific issues.
- Involved in routine operation of the company.
- Helped to obtain several Georgia State Grants and CDC SBIR grants.

07/2007 to 07/2010: Associate Professor of Physics – Research, Education, and Service.
Department of Physics and Astronomy, The University of Georgia, Athens, Georgia

- Nanofabrication: Expanding the material and structural fabrication capability of GLAD: (1) Developed different strategies to fabricate multilayer nanorod arrays, side coated nanorod arrays, core-shell nanorod arrays, etc. (2) Built a co-deposition GLAD system to fabricate nanoparticle decorated nanorod arrays, composite material nanorod arrays, and composition graded nanorod arrays. These investigations greatly expanded the materials and structural variations that GLAD could fabricate and stimulated many different applications of nanostructures made by GLAD.
- Understanding the AgNR based SERS: (1) Explored the effect of deposition conditions such as deposition thickness, vapor incident angle, lateral spacing and lattice regularity, on the performance of the AgNR substrates; (2) Systematically investigated the underlayer thin layer effect on the performance of the AgNR substrates; (3) Conducted both experimental and numerical studies on the sites of AgNR substrate where the biggest SERS signals came from; (4) Developed a phenomenological model to explain the polarization effect, the incident angle effect, and the underlayer thin film effect on the SERS performance of AgNR substrates. (5) Developed Au nanoparticle decorated Si nanorod arrays for SERS applications.
- SERS based chemical and biological sensors: (1) Developed AgNR SERS based sensors to detect and differentiate different viruses, bacteria, microRNAs, melamine, and nuclear wastes. (2) Designed different AgNR based sensing devices such as optical probe, multi-well substrate for multiplexing application, flow cells, optical fiber probe, etc.
- Catalytic nanomotors: (1) Used GLAD to uniquely design several different shaped catalytic nanomotors, such as rod, L-shape, helix, etc., and achieved rotary and translational motions; (2) Measured the propulsion forces; (3) Proposed a bubble propulsion mechanism for one kind of catalytic nanomotors; (4) Explored the self-assembly of multi-constituent catalytic nanomotors. These works laid an experimental and theoretical foundation for later works on nanomotor or active colloid field.
- Photocatalyst development: (1) Explored the optical and photocatalytic properties of various oxide nanorod arrays, such as TiO_2, WO_3, Fe_2O_3, and TiO_2/WO_3 heterostructure, as well as the effect of associated structural parameters; (2) Constructed photoelectrochemical water splitting cells form ZnO and TiO_2 nanostructures. These studied laid the foundation for later exploration of oxide materials for solar water splitting applications and CO_2 solar conversion applications.

- Energy storage materials: (1) Explored the hydrogen storage performance of Mg nanoblades fabricated by GLAD method; (2) Improved the hydrogenation/dehydrogenation dynamics by side-coating Mg nanoblades with Vanadium nanoparticles; (3) Explored the Si nanorod array-based anode for Li ion battery electrode.

08/2002 to 06/2007: Assistant Professor of Physics – Research, Education, and Service.
Department of Physics and Astronomy, The University of Georgia, Athens, Georgia

- Wetting of nanostructures: (1) Discovered the nanocarpet effect during the wetting and dewetting of nanorod arrays; (2) Performed a systematic study of the nanocarpet effect and developed a theoretical model that fitted very well with experimental results; (3) Explored ways to prevent nanocarpet effect; and (4) Investigated the formation of superhydrophobic surfaces.
- Silver nanorod array substrate: (1) Discovered that the Silver nanorod array (AgNR) substrates could serve as excellent SERS substrates; (2) Investigated the effect of polarization of excitation laser on the SERS performance of AgNR substrates; (3) Explored the incident angle of excitation laser on the performance of SERS of AgNR substrates; (4) First time ever, used the AgNR substrate and SERS spectroscopy to investigate the detection and differentiation of viruses and their strains. These works established a solid foundation for expanding AgNR-based SERS substrates for various sensor development or other optical/electrical applications.
- Cell growth on textured surfaces: Explored how different length scales of textured surfaces affected the neural cell growth.

08/2000 to 07/2002: Research Assistant Professor of Physics – Research.
Department of Physics, Applied Physics, and Astronomy, Rensselaer Polytechnic Institute, Troy, NY

- Glancing angle deposition: (1) Developed different strategies to tune the shape and tilting angles of the nanorod arrays fabricated by GLAD; (2) Understood the scaling behavior of the diameter of the nanorods during the nanorod growth; (3) Explored the magnetic properties of tilted Co nanorod arrays.
- Thin film growth dynamics: Explored the non-local roughening dynamics mechanism of chemical vapor deposition.
- Carbon nanotubes: investigated the AC conductance of carbon nanotubes, ultrafast optical property of carbon nanotubes, and characterization

08/1999 to 07/2000: Research Scientist – Research.
Department of Physics, Applied Physics, and Astronomy, Rensselaer Polytechnic Institute, Troy, NY

- Characterization of rough surfaces: Further developed light scattering technique to characterize the surface roughness of thin films.
- Thin film growth dynamics: (1) Expanded the non-local roughening dynamics mechanism to chemical vapor deposition and compared the results from experiments; (2) Investigated experimentally the roughening mechanism for vapor deposition polymerization.
- Effects of surface roughness on the physical properties of thin films: Continued to explore the roughness effect on the electric and magnetic properties of thin films.

01/1995 to 07/1999: Research Assistant – Research.

Department of Physics, Applied Physics, and Astronomy, Rensselaer Polytechnic Institute, Troy, NY

- Characterization of rough surfaces: (1) Developed light scattering technique to characterize the surface roughness of thin films and *in-situ* characterization of roughening process; (2) Extended the diffraction theory from rough surfaces to non-Gaussian rough surfaces, anisotropic rough surfaces, and mounded surfaces.
- Thin film growth dynamics: (1) Experimentally and theoretically investigated the surface roughening dynamics in physical vapor deposition of Si films and plasma etching of Si wafers; (2) Proposed and investigated a non-local roughening dynamics mechanism for plasma etching.
- Effects of surface roughness on the physical properties of thin films: Experimentally and theoretically explored how surface roughness affected the electric (conductivity and capacitance) and magnetic properties of thin films.
- Chemical mechanical polishing (CMP) of polymer films: Conducted some very earlier works on CMP of polymer films.

AWARDS & HONORS

Vebleo Fellow, 2021
Fellow of International Association of Advanced Materials (IAAM), 2020
Fellow of International Society for Optics and Photonics (SPIE), 2017
Fellow of American Vacuum Society (AVS), 2017
Distinguished Research Professor, University of Georgia, 2016
Nano-Engineering Pioneer Award, SPIE Defense, Security and Sensing Meeting, 2012
Creative Research Medal, University of Georgia, 2009
"*Mechanism of Light-Induced Degradation in Amorphous Silicon and Its Elimination Methods*."
2nd Prize of the Natural Science Award, Chinese Academy of Sciences, 2000
American Vacuum Society Outstanding Scholarship, 1999
Materials Research Society Graduate Student Silver Award, 1998

SOCIETY MEMBERSHIPS

Member, SPIE
Member, American Physics Society
Senior Member, IEEE
Member, AAAS

PROFFESSIONAL ACTIVITIES

10/2020 -	Member of Editorial Board, Nanomaterials
11/2022 -	Member of Editorial Board, Targets
02/2023 -	Member of Advisory Committee, Chem. Soc. Rev.

Service:

SPIE Scholarship Committee (2016 – 2018)
Judge for MRS Graduate Student Award (2006)
Member of Advisory Committee, Center for Ultrastructural Research at UGA (2006-2009)
Leader for UGA Cleanroom Facility Design and Construction (2008-2010)

Member of Engineering Council, UGA Faculty of Engineering/College of Engineering (2009-2012)
Member of UGA Research Award Committee (2019 - 2022)
Member of University Council (2012 – 2015)
Member of UGA Postdoc Award Committee (2014-2016)
Member of Advisory Committee, Georgia Advanced Computing Resource Center (2012 – 2015)
Member of the University Promotion & Tenure Review Committee (2022 -)
Member of Advisory Committee, Nanoscale Science and Engineering Center at UGA (2005-2009)
Member of the Departmental Graduate Admission Committee (2002 – 2005, 2007-2008, 2010-2011, 2014-2021)
Chairman, Physics Department Faculty Search Committee (2022 – 2023)
Chairman/member of the Departmental Prelim Exam Committee (2007-2008, 2017, 2022-2023)
Member of the Departmental Planning and Development Committee (2007-2008)
Member of the Departmental Post Tenure Review Committee (2007-2009, 2011-2012, 2012-2013, 2015)
Chairman/Member of the Departmental Graduate Curriculum Committee (2012-2013, 2014-2016)
Chairman, Physics Department Award Committee, Georgia Science and Engineering Affair (2010 – 2014)

Panelists: 2 NSF NIRT panels (2004), NSF CAREER panel (2004, 2018, 2019), NSF NanoManufacturing panel (2008, 2014), NSF CMMI panel (2012), NSF DMR panel (2013), NSF CMMI panel (2014), NSF SBIR/STTR (2016, 2017), NSF MRSEC Site Visit (2018), NIH COVID-19 Study Section (2020)

Nano Art Exhibits (March 2007, Sept. 2007)

Meeting Organization: UNYVAC'2002, August 2002, Troy, NY

ACS Southeast Regional meeting'06, MRS'08 Fall Meeting, co-oganizing SESAPS meeting'09
Co-organizing International Conference on Sculptured Thin Films (GLAD 2021), May 6-7, 2021

Proposal reviewer: ACS Petroleum Research Fund, US Civilian Research and Development Foundation, National Science Foundation, USDA, Army Research Lab, Research Cooperation, Ontario Research Fund, NIH SBIR, DOE SBIR, DOE Hydrogen Initiative, Hong Kong Research Grants Council, the Netherlands Organization for Scientific Research, German-Israeli Water Technologies, Welsh Government, Kuwait Foundation for the Advancement of Sciences (KFAS), German Research Foundation, Ministry of Education (Singapore)

Journal Referee: Nature Nanotechnology, Nature Communication, Science Advance, Nano Letters, ACS Nano, Journal of American Chemical Society, Nano Today, Advanced Functional Materials, Small, ACS Applied Materials & Interfaces, ACS Photonics, Biosensors and Bioelectronics, Applied Physics Letters, Optical Letters, Optical Express, Nanotechnology, Nanoscale, ACS Catalysts, Journal of Electrochemical Society, Physica

Status Solidi, Scientific Reports, Physical Review B, Journal of Physics & Chemistry of Solids, Journal of Vacuum Science and Technology, Journal of Applied Physics, Surface Sciences, Journal of Luminescence, Journal of Physical Chemistry, Langmuir, Crystal Growth and Design, Sensors and Actuators B, Spectra, Journal of Physics D: Applied Physics, Journal of Materials Research, Thin Solid Films, Journal of Materials Chemistry, Journal of Raman Spectroscopy, *etc.*

MAJOR AWARDS FOR STUDENT/POSTDOC SURPERVISED

Dr. Yanjun Yang	2023 Nellie Yeoh Whetten Award, American Vacuum Society
Dr. Hoang M Luong	2022 Excellence in Research by the Graduate Student Award, UGA
Dr. Hoang M Luong	2021 ICMCTF Graduate Student Award, AVS ASED
Dr. Steve Larson'18	2018 Graduate Research Award, AVS Thin Film Division
Dr. Yizhuo He'15	2014 Graduate Research Award, AVS Thin Film Division
Dr. Manoj Manjare'14	2013 Graduate Research Award, AVS Thin Film Division
Dr. George Larsen'14	2012 Graduate Research Award, AVS Thin Film Division
Dr. Justin Abell'12	2012 American Vacuum Society National Student Award
Dr. John Gibbs'11	2011 Graduate Research Award, American Vacuum Society
Dr. Yuping He	2011 UGA Postdoctoral Research Award
Dr. Yongjun Liu'10	2009 Graduate Research Award, American Vacuum Society
Dr. Jianguo Fan'07	2008 Excellence in Research by the Graduate Student Award, UGA
Dr. Jianguo Fan'07	2007 The Dorothy M. and Earl S. Hoffman Scholarship, AVS
Dr. Yuping He	2007 Outstanding Young Researcher Award, AVS Thin Film Division

ALUMNI

POSTDOCORAL RESEARCH ASSOCIATES

Dr. Bin Ai, Professor, Chongqing University, China
Dr. J. P. Singh, Professor, Physics Department, Indian Institute of Technology Delhi, India
Dr. Kun Yao, Senior Lecturer and Cleanroom Manager at University of Georgia
Dr. Yuping He, Real Estate Broker, ATLFDC Realty LLC
Dr. Yu Zhu, Senior Engineer, Suzhou Institute of Nano-tech and Nano-bionics, China
Dr. Slade Jokela, Project Scientist at Klar Scientific
Dr. Huanhua Wang, Professor at School of Physical Sciences, University of Chinese Academy of Sciences, China
Dr. Xianfan Zhu, Professor of College of Physical Science and Technology, Xiamen University, China

GRADUATE STUDENTS

Yanjun Yang (2024), Research Associate UGA
Layne Bradley (2021), Advanced Missile Signature Center Analyst, Axient LLC
Hoang M. Luong (2021), Research Associate, University of California, Santa Barbara
Steve Larsen (2018), Material Scientist at Sandia National Laboratories
Lu Zhu (2018), Sr Scientist II at Alcon
Weijie Huang (2017), Data Scientist, Cardlytics
Whitney Ingram (2016), Research Staff, Sandia National Laboratory
Rui Cheng (2016), Staff Application Engineer, Synopsys Inc.

Yizhuo He (2016), Software Development Engineer, Amazon
Pradip Basnet (2015), Limited-Term Assistant Professor of Physics, Kennesaw State University
Manoj Manjare (2014), Quality and Reliability Engineer at Intel Corporation
George Larsen (2014), Research Staff, Savanah River National Laboratory
Jing Chen (2014), FSC Technical Manager, Merieux NutriSciences (China)
Xiaomeng Wu (2014), Associate Professor, China Agricultural University
Justin Abell (2012), Senior Scientist, Microfluidics at Generate Biomedicines, Inc.
Jun Chen (2012), Assistant Professor at UCLA
John Gibbs (2011), Associate Professor of Physics, Northern Arizona University
Yongjun Liu (2010), Lead Machine Learning Engineer at FinThrive
Wilson Smith (2010), Professor, Chem. Bio. Eng., University of Colorado, and Senior Research Scientist, National Renewable Energy Laboratory
Zhongyue Zhang (2009), Professor and Associate Dean, School of Physics and Information Technology, Shaanxi Normal University
Junxue Fu (2009), Lecturer, Department of Physics, Hong Kong Baptist University
Jianguo Fan (2007), Microscopy Group Lead, II-VI Incorporated

US PATENTS

12. Wilson Smith and Yiping Zhao, "*Photocatalytic structures, methods of making photocatalytic structures, and methods of photocatalysis*," US Patent #8,975,205B2.
11. Kun Yao, Manoj Manjare, Christopher Andrew Barrett, Tina Trnka Salguero, and Yiping Zhao, "*Functional nanostructured "jelly rolls" with nanosheet components*," US Patent # 9,202,606B2.
10. Yiping Zhao, Justin L. Abell, and Jing Chen, "*Thin layer chromatography-surfaced enhanced Raman spectroscopy chips and methods of use*," US Patent #8,810,789B2.
9. Yiping Zhao and Xiaobing Du, "*Methods of melamine detection and quantification*," US Patent #8,107,070B2.
8. R. A. Dluhy, R. A. Tripp, Y.-P. Zhao, and J. Driskell, "*Surface enhanced Raman spectroscopy (SERS) systems for the detection of viruses and methods of use thereof,"* US Patent #7,940,387B2.
7. Duncan C. Krause, Suzanne Marie Larkin Hennigan, Richard A. Dluhy, Jeremy Driskell, Yiping Zhao, and Ralph A. Tripp, "*Surface enhanced Raman spectroscopy (SERS) systems for the detection of bacteria and methods of use thereof* ," US Patent #7,889,334B2.
6. Yiping Zhao, Richard A. Dluhy, Ralph A. Tripp, Yao-wen Huang, Hsiao Yun Chu, and Liu, Yongjun, "*Methods of use for surface enhanced Raman spectroscopy (SERS) systems for the detection of bacteria*," US Patent #7,880,876B2.
5. Y.-P. Zhao, R. A. Dluhy, R. A. Tripp, S. Chaney, and S. Shanmukh, "*Surface enhanced Raman spectroscopy (SERS) systems, substrates, fabrication thereof, and methods of use thereof,"* US Patent #7,738,096B2.
4. Y.-P. Zhao and J.-G. Fan, "*Structures having aligned nanorods and methods of making,*" US Patent #7,658,991B2.
3. Y.-P. Zhao and Y.-J. Liu, "*Fiber Optic SERS sensor systems and SERS probes,*" US Patent #7,656,525 B2.

2. Y.-P. Zhao, R. A. Dluhy, R. A. Tripp, S. Chaney, S. Shanmukh, and Leslie P. Jones, *"Surface enhanced Raman spectroscopy (SERS) systems and methods of use thereof,"* US Patent #7,583,379 B2.

1. Y.-P. Zhao, Y.-C. Chen, N. R. Raravikar, X.-C. Zhang, P. M. Ajayan, T.-M. Lu, and G.-C. Wang, "*An ultrafast all-optical switch using single-walled carbon nanotube polymer composites,*" US Patent #6,782,154B2.

PENDING PATENTS

1. Yiping Zhao; Ralph A. Tripp; Yanjun Yang; Xianyan Chen; Hemant K. Naikare, "*Methods and Systems for Rapid Detection of Analytes*," Serial No.: 18/500,860; Filing Date: November 2, 2023.
2. Yiping Zhao; Ralph A. Tripp; Yanjun Yang, "*Device, System, and Method of Detecting Biological Agents*," Serial No.: 18/496,455; Filing Date: October 27, 2023.

LIST OF PUBLICATIONS

Google Scholar: Total Citation > 22,600; H-index = 83
Research ID A-4968-2008: Total Citation > 16,000; H-index = 69
ORCID: https://orcid.org/0000-0002-3710-4159

BOOKS

3. Yiping Zhao and Yoong Sheng Phang, *Use of Smartphones in Optical Experimentation* (SPIE Press, 2022).

2. Jin Zhong Zhang, Jinghong Li, Yat Li, and Yiping Zhao, *Hydrogen Generation, Storage, and Utilization* (John Wiley & Sons Inc., 2014).

1. Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, *Characterization of Amorphous and Crystalline Rough Surface - Principles and Applications* (Experimental Methods in the Physical Sciences, Vol. 37) (Academic Press, 2001).

BOOK CHAPTERS

9. Yanjun Yang, Yoong Sheng Phang, and Yiping Zhao, "*Nanotechnology for stroke treatment*" in "*Nanotechnology for Hematology, Blood Transfusion, and Artificial Blood*" edited by Adil Denizli, Tuan Anh Nguyen, Rajan Mariappan, Mohammad Alam, and Khaliqur Rahman (Elsevier, 2021).

8. Weijie Huang, Rui Cheng, Leidong Mao, and Yiping Zhao, "*Active colloids: toward an intelligent micromachine*" in "*Anisotropic Particl Assemblies: Synthesis, Assembly, Modeling, and Applications*" edited by Ning Wu, Daeyeon Lee, and Alverto Striolo (Elsevier, 2018).

7. Ke Xu, Mohsen Purahmad, Kimber Brenneman, Xenia Meshik, Sidra Farid, Shripriya Poduri, Preeti Pratap, Justin Abell, Yiping Zhao, Barbara Nichols, Eugene Zakar, Michael Stroscio, and Mitra Dutta, "*Design and Applications of Nanomaterial-Based and Biomolecule-Based Nanodevices and Nanosensors*" in "*Design and Applications of Nanomaterials For Sensors*" Edited by Jorge M. Seminario (Springer, Heidelberg 2014), Chap. 3, pp. 61–97

6. Xiaomeng Wu, Jing Chen, Bosoon Park, Yao-Wen Huang, and Yiping Zhao, "*The Use of Silver Nanorod Array-Based Surface-Enhanced Raman Scattering Sensor for Food Safety Applications*," in "*Advances in Applied Nanotechnology for Agriculture*" edited by Bosoon Park and Michael Appell, ACS Symposium Series, Vol. 1143 (American Chemical Society Publication, 2013). Chap. 5, pp. 85–108.

5. Justin L. Abell, Jeremy D. Driskell, Ralph A. Tripp, and Yiping Zhao, "*Current Progress on Surface-Enhanced Raman Scattering Chemical/Biological Sensing*," in "*Functional Nanoparticles for Bioanalysis, Nanomedicine, and Bioelectronic Devices Volume 2*" edited by Maria Hepel and Chuan-Jian Zhong, ACS Symposium Series, Vol. 1113 (American Chemical Society Publication, 2012) Chap. 10, pp. 235–272.

4. J. D. Driskell, S. Shanmukh, Y. Liu, S. Chaney, S. Hennigan, L. Jones, D. Krause, R. A. Tripp, Y.-P. Zhao, and R. A. Dluhy, "*Novel nanoarray SERS substrates used for high sensitivity virus biosensing and classification*," in "*Nanoscience and Nanotechnology for Chemical and Biological Defense*" edited by R. Nagarajan, Walter Zukas, T. Alan Hatton and Stephen Lee (American Chemical Society Publication, 2010) Chap. 8.

3. Y.-P. Zhao and R. A. Tripp, "*Spherical and Anisotropic Silver Nanomaterials in Medical Diagnosis*" in "*Metallic Nanomaterials*" Vol. 1, edited by Challa S. S. R. Kumar (Wiley-VCH, 2009), Chap. 5, pp.173–224.

2. J. Gibbs and Y.-P. Zhao, "*Catalytic Nanomotors*," in "*Design of Heterogeneous Catalysts: New Approaches based on Synthesis, Characterization and Modeling*" edited by Umit S. Ozkan (Wiley-VCH, 2009), Chap. 6, pp. 141–160.

1. Y.-P. Zhao, "*Growth and Synthesis of Nanostructured Thin Films*," in "*Functional Thin Films and Nanostructures for Sensors*" edited by A. Zribi and J. Fortin (Springer, 2009), Chap. 3, pp.31–64.

JOURNAL PAPERS

339. Tao Wang, Yanjun Yang, Haoran Lu, Jiaheng Cui, Xianyan Chen, Ping Ma, Wenxuan Zhong, Yiping Zhao, "*Functional regression for SERS spectrum transformation across diverse instruments*," Analyst, DOI: 10.1039/d4an01177e (2025).

338. Yuxiang Zhu, Shenghan Guo, Dharneedar Ravichandran, Arunachalam Ramanathan, M. Taylor Sobczak, Alaina F. Sacco, Dhanush Patil, Sri Vaishnavi Thummalapalli, Tiffany V. Pulido, Jessica N. Lancaster, Johnny Yi, Jeffrey L. Cornella, David G. Lott, Xiangfan Chen, Xuan Mei, Yu Shrike Zhang, Linbing Wang, Xianqiao Wang, Yiping Zhao, Mohammad K. Hassan, Lindsay B. Chambers, Taylor G. Theobald, Sui Yang, Liang Liang, Kenan Song, "*3D-printed polymeric biomaterials for health applications*," Advanced Healthcare Materials doi.org/10.1002/adhm.202402571 (2024).

337. Manal Hassan, Yiping Zhao, and Susu M. Zughaier, "*Recent advances in bacterial detection using surface-enhanced Raman scattering*," Biosensors **14**, 375 (2024).

336. Joshua C. Rothstein, Jiaheng Cui, Yanjun Yang, Xianyan Chen, and Yiping Zhao, "*Ultra-sensitive detection of PFASs using surface enhanced Raman scattering and machine learning: a promising approach for environmental analysis*," Sensors & Diagnostics **3**, 1272 - 1284 (2024).

335. Amit Kumar, Md Redwan Islam, Susu M. Zughaier, Xianyan Chen and Yiping Zhao, "*Precision classification and quantitative analysis of multiple bacteria biomarkers via*

surface-enhanced Raman spectroscopy and machine learning," Spectrochimica Acta A **320**, 124627 (2024).

334. Yanjun Yang, Jiaheng Cui, Dan Luo, Jackelyn Murray, Xianyan Chen, Sebastian Hülck, Ralph Tripp, and Yiping Zhao, "*Rapid detection of SARS-CoV-2 variants using ACE2-based SERS sensor enhanced by CoVari deep learning algorithms*," ACS Sensors **9**, 3158 – 3169 (2024).

333. Xiangxin Lin, Mingyu Cheng, Xinyi Chen, Jinglan Zhang, Yiping Zhao, and Bin Ai, "*Unlocking predictive capability and enhancing sensing performances of plasmonic hydrogen sensors via phase space reconstruction and convolutional neural networks*," ACS Sensors **9**, 3877 - 3888 (2024).

332. Yanjun Yang, Hao Li, Les Jones, Jackelyn Murray, Hemant Naikare, Yung-Yi C. Mosley, Teddy Spikes, Sebastian Hülck, Ralph A. Tripp, Bin Ai, and Yiping Zhao, "*Advancing SERS diagnostics in COVID-19 with rapid, accurate, and label-free viral load monitoring in clinical specimens via SFNet enhancement*," Advanced Materials Interfaces, DOI 10.1002/admi.202400013 (2024).

331. Yanjun Yang, Xinyi Chen, Bin Ai, and Yiping Zhao, "*The impact of analyte size on SERS enhancement location, enhancement factor, excitation wavelength, and spectrum*," Sensors & Diagnostics **3**, 668 - 676 (2024).

330. Aleksandra Valueva, Sergei Novikov, Joshua Bledsoe, Yile Cai, Alevtina Maksimova, Jason Locklin, Yiping Zhao, and Vladislav Klepov, "*Cubic Halide Perovskites in the Cs(Pb1-xSnx)(Br3-yCly) solid solutions for crack-free Bridgman grown single crystals*," MRS Communications, DOI: 10.1557/s43579-024-00535-6 (2024).

329. Yiping Zhao, Andrei Galiautdinov, and Jingzhi Tie, "*The N-oscillator Born-Kuhn model: an in-depth analysis of chiro-optical properties in complex chiral systems*," Nanomaterials **14**, 270 (2024).

328. Yiping Zhao, Amit Kumar, and Yanjun Yang, "*Unveiling practical considerations for reliable and standardized SERS measurements: lessons from a comprehensive review of oblique angle deposition-fabricated silver nanorod array substrates*," Chem. Soc. Rev. **53**, 1004-1057 (2024).

327. Matthew Becton, Jixin Hou, Yiping Zhao, and Xianqiao Wang, "*Dynamic clustering and scaling behavior of active particles under confinement*," Nanomaterials **14**, 144 (2024).

326. Yangxiu Chen, Yanjun Yang, Jiaheng Cui, Hong Zhang, and Yiping Zhao, "*Decoding PFAS contamination via Raman spectroscopy: a combined DFT and machine learning investigation*," J. Harz. Mater. **465**, 133260 (2024).

325. Yiping Zhao, "*On the measurements of surface enhanced Raman scattering spectrum: effective enhancement factor, optical configuration, spectral distortion, and baseline variation*," Nanomaterials **13**, 2998 (2023).

324. Yilong Ju, Oara Neumann, Mary Bajomo, Yiping Zhao, Peter Nordlander, Naomi J. Halas, and Ankit Patel, "*Identifying surface-enhanced Raman spectra with a raman library using machine learning*," ACS Nano **17**, 21251–21261 (2023).

323. Shahab Razavi and Yiping Zhao, "*Plasmon hybridizations in compound nanorod–nanohole arrays*," Nanomaterials **13**, 2135 (2023).

322. Chun Liu, Jinglan Zhang, Yiping Zhao, and Bin Ai, "*Inverse design of plasmonic nanohole arrays by combing spectra and structural color in deep learning*," Advanced Intelligent Systems, doi.org/10.1002/aisy.202300121 (2023).

321. Mona Asadinamin, Aleksandar Živković, Susanne Ullrich, Henning Meyer, and Yiping Zhao, "*The charge dynamics of a CuO thin film on pico-second to micro-second timescales revealed by transient absorption spectroscopy*," ACS Applied Materials & Interfaces **15**, 18414 - 18426 (2023).

320. Hoang Mai Luong, Tu Anh Ngo, Minh Thien Pham, Yiping Zhao, George K. Larsen, Thuc-Quyen Nguyen, and Tho Duc Nguyen, "*Ultra-fast and sensitive magneto-optical hydrogen sensors using a magnetic nano-cap array*," Nano Energy **109**, 108332 (2023).

319. Nicholas Filla, Yiping Zhao, and Xianqiao Wang, "*Fibrin fiber deformation mechanisms: insights from phenomenological modeling to molecular details*," Biomechanics and Modeling in Mechanobiology, DOI: 10.1007/s10237-022-01685-z (2023).

318. Andrei Galiautdinov and Yiping Zhao, "*Plasmonic properties of composition graded spherical nanoparticles in quasi-static approximation*," J. Phys. D: Appl. Phys. **56**, 055102 (2023).

317. Yanjun Yang, Hao Li, Les Jones, Jackelyn Murray, James Haverstick, Hemant K. Naikare, Yung-Yi C. Mosley, Ralph Tripp, Bin Ai, and Zhao, Yiping, "*Rapid detection of SARS-CoV-2 RNA in human nasopharyngeal specimens using surface-enhanced Raman spectroscopy and deep learning algorithms*," ACS Sensors **8**, 297 – 307 (2023).

316. Mary M. Bajomo, Yilong Ju, Jingyi Zhou, Simina Elefterescu, Corbin Farr, Yiping Zhao, Oara Neumann, Peter Nordlander, Ankit Patel, and Naomi J. Halas, "*Computational chromatography: a machine learning strategy for demixing individual chemical components in complex mixtures*," Proc. Natl. Acad. Sci. U.S.A. **119**, e2211406119 (2022).

315. Yanfeng Wang, Dexian Ye, Fengtong Zhao, Zhengjun Zhang, and Yiping Zhao, "*Structure and optical property prediction of plasmonic metasurfaces fabricated by shadow sphere lithography*," ACS Applied Nano Materials **5**, 17879-17890 (2022).

314. Yoong Sheng Phang and Yiping Zhao, "*Determining the focal length of converging and diverging lenses using a smartphone*," The Physics Teacher **60**, 703 (2022).

313. Nichola Filla, Yiping Zhao, and Xianqiao Wang, "*A tractable, transferable, and empirically consistent fibrous biomaterial model*," Polymer **14**, 4437 (2022).

312. Yanjun Yang, Beibei Xu, Jackelyn Murray, James Haverstick, Xianyan Chen, Ralph A. Tripp, and Yiping Zhao, "*Rapid and quantitative detection of respiratory viruses using surface-enhanced Raman spectroscopy and machine learning*," Biosensors and Bioelectronics **217**, 114721 (2022).

311. Wang Yanfeng, Shen Ao, Fei Yang, Zhengjun Zhang, Zhengjun, and Yiping Zhao, "*Coupling between surface plasmon modes of single-layer complex Silver nanohole array and enhancing index sensing*," ACS Applied Nano Materials **5**, 9761 - 9770 (2022).

310. Yanjun Yang, Beibei Xu, James Haverstick, Nabil Ibtehaz, Artur Muszyński, Xianyan Chen, Muhammad E. H. Chowdhury, Susu M. Zughaier, and Yiping Zhao, "*Differentiation and classification of bacterial endotoxins based on surface enhanced Raman scattering and advanced machine learning*," Nanoscale, **14**, 8806-8817 (2022).

309. Nima Karimitari, Bin Ai, and Yiping Zhao, "*A comparison study of the Born-Kuhn model and the finite-difference-time-domain calculations on stacked plasmonic nanorods*," J. Phys. D: Appl. Phys. **55**, 325104 (2022).

308. Lauren Hanna, Edgar Movsesian, Miguel Orozco, Anthony R. Bernot Jr., Mona Asadinamin, Learnmore Shenje, Susanne Ullrich, Yiping Zhao, Nicholas Marshall, Jason A. Weeks,

Michael B. Thomas, Joseph A. Teprovich Jr., and Patrick A. Ward, "*Spectroscopic investigation of the electronic and excited state properties of para-substituted Tetraphenyl Porphyrins and their electrochemically generated ions,*" Spectrochimica Acta A **278**, 121300 (2022).

307. Bin Ai, Yujing Sun, and Yiping Zhao, "*Plasmonic hydrogen sensors*," Small, 2107882 (2022).

306. Yanjun Yang, Chunyuan Song, Jingjing Zhang, Jie Chao, Hoang Mai Luong, Yiping Zhao, Lianhui Wang, "*DNA self-assembled Au nanoparticle clusters on the silver nanorod array for high-sensitive and multiplex detection of cancer-related biomarkers*," Nanoscale, **14**, 4538-4547 (2022).

305. Yanjun Yang, Jackelyn Murray, James Haverstick, Ralph A. Tripp, Yiping Zhao, "*Silver nanotriangle array based LSPR sensor for rapid coronavirus detection*," Sensors and Actuators B: Chemical, **359**, 131604 (2022).

304. Layne Bradley, Xiangxin Lin, Yanjun Chen, Mona Namin, Bin Ai, and Yiping Zhao, "*Janus particles with flower-like patches prepared by shadow sphere lithography*," Langmuir **37**, 13637–13644 (2021).

303. Yanfeng Wang, Inyoung Choi, Kaiyuan Zhang, Yanjun Yang, Shen Ao, Shen; Xiaotian Xue, Wangyang Fu, Zhengjun Zhang, and Yiping Zhao, "*Highly conductive nanograting-nanohole structures with tunable and dual-band spectral transparency*," ACS Applied Electronic Materials, **3**, 3489–3500 (2021).

302. Yanfeng Wang, Fei Yang, Zhengjun Zhang, and Yiping Zhao, "*The performance of transparent metallic thin films*," J. Phys. Chem. C **125**, 16334 – 16342 (2021).

301. Xiaomeng Wu, Yiping Zhao, and Susu M. Zughaier, "*Highly sensitive detection and differentiation of endotoxins derived from bacterial pathogens by surface-enhanced Raman scattering*," Biosensors **11**, 234 (2021).

300. Weijie Huang, Xibo Li, Bin Ai, and Yiping Zhao, "*Facile fabrication of composite Ag/Fe_3O_4 and porous Fe_3O_4 nanorods based on oblique angle co-deposition*," J. Phys. Chem. C **125**, 11750 - 11755 (2021).

299. Minh Pham, Hoang Luong, Huy Pham, Tyler Guin, Yiping Zhao, George Larsen, and Tho Nguyen, "*$Pd_{80}Co_{20}$ nanohole arrays coated with Poly(methyl methacrylate) for high-speed hydrogen sensing with part-per-billion detection limit*," ACS Applied Nano Materials **4**, 3664 -3674 (2021).

298. Yanfeng Wang, Zhengjun Zhang, and Yiping Zhao, "*The effect of nanorod position on the plasmonic properties of the complex nanorod in nanohole arrays*," Journal of Physics D: Applied Physics **54**, 155201 (2021).

297. Hoang Luong, Minh Pham, Tho Nguyen, and Zhao, Yiping, "*Active Ag-Co composite chiral nanohole arrays*," The Journal of Physical Chemistry C **125**, 1, 716 – 723 (2021).

296. Lu Zhu, David W. Pearson, Stéphane L. Benoit, Jing Xie, Jitendra Pant, Yanjun Yang, Arnab Mondal, Hitesh Handa, Jane Y. Howe, Yen-Con Hung, Jorge E. Vidal, Robert J. Maier, and Yiping Zhao, "*Highly efficient antimicrobial activity of $Cu_xFe_yO_z$ nanoparticles against important human pathogens*," Nanomaterials **10**, 2294 (2020).

295. Learnmore Shenje, Steven Larson, Yiping Zhao, and Susanne Ullrich, "*Composition effects on ultrafast optical properties of Cu_xO_y thin films: a transient absorption study*," The Journal of Physical Chemistry C **124**, 24908 – 24918 (2020).

294. Yanjun Yang and Yiping Zhao, "*The discretized motion of surface walker under a non-uniform AC magnetic field*," Langmuir **36**, 11125 – 11137 (2020).

293. Yanfeng Wang, Harrison Chong, Zhengjun Zhang, and Yiping Zhao, "*Large-area fabrication of complex nanohole arrays with highly tunable plasmonic properties*," ACS Appl. Mater. Interfaces **12**, 37435 – 37443 (2020).

292. Chunyuan Song, Xinyu Jiang, Yanjun Yang, Jingjing Zhang, Steven Larson, Hoang Luong, Yiping Zhao, and Lianhui Wang, "*High-sensitive assay of nucleic acid using tetrahedral DNA probes and DNA Concatamers with a surface-enhanced Raman scattering/surface plasmon resonance dual-mode biosensor based on a Silver nanorod-covered Silver nanohole array*," ACS Appl. Mater. Interfaces **12**, 31242 – 31254 (2020).

291. Yanfeng Wang, Hoang Mai Luong, Zhengjun Zhang and Yiping Zhao, "*Coupling between plasmonic nanohole array and nanorod arrays: the emerging of a new extraordinary optical transmission mode and epsilon-near-zero property*," Journal of Physics D: Applied Physics **53**, 275202 (2020).

290. Layne Bradley, Dexian Ye, Hoang Luong, and Yiping Zhao, "*Transition from discrete patches to plasmonic nanohole array by glancing angle deposition on nanosphere monolayers*," Nanotechnology **31**, 205301 (2020).

289. Bin Ai, Hoang Luong, and Yiping Zhao, "*Chiral nanohole arrays,*" Nanoscale **12**, 2479 – 2491 (2020).

288. Bilin Ge, Steven Larson, Huatian Tu, Yiping Zhao, and Yiyan Fei, "*Generalized ellipsometry characterization of Ag nanorod arrays prepared by oblique angle deposition*," Nanotechnology **31**, 075705 (2020).

287. Yanfeng Wang, Zhengjun Zhang, and Yiping Zhao, "*The IR plasmonic properties of sub-wavelength ITO rod arrays predicted by anisotropic effective medium theory*," Nanotechnology **31**, 075203 (2020).

286. Hoang Luong, Minh Pham, Tho Nguyen, and Yiping Zhao, "*Enhanced resonant Faraday rotation in multilayer magneto-plasmonic nano-hole arrays and their sensing application*," The Journal of Physical Chemistry C **123**, 28377 – 28384 (2019).

285. Liqin Su, Layne Bradley, Yiling Yu, Yifei Yu, Linyou Cao, Yiping Zhao, and Yong Zhang, "*Surface-enhanced Raman scattering of monolayer transition metal dichalcogenides on Ag nanorod arrays*," Optics Letters **44**, 5493 – 5496 (2019).

284. Hoang Luong, Minh Pham, Tho Nguyen, and Yiping Zhao, "*Magneto-plasmonic properties of Ag-Co composite nano-triangle arrays*," Nanotechnology **30**, 425203 (2019).

283. Hoang Mai Luong, Minh Pham, Bin Ai, Tho Duc Nguyen, and Yiping Zhao, "*Magnetoplasmonic properties of Ag-Co composite nanohole arrays*," Phys. Rev. B **99**, 224413 (2019).

282. Pradip Basnet, Erik Anderson, and Yiping Zhao, "*Hybrid Cu_xO-TiO_2 nanopowders prepared by ball milling for solar energy conversion and visible-light-induced wastewater treatment*," ACS Applied Nano Material **2**, 2446 – 2455 (2019).

281. Steven Larson, Hoang Luong, Chunyuan Song, and Yiping Zhao, "*Dipole radiation induced extraordinary optical transmission for Silver nanorods covered Silver nanohole arrays*," J. Phys. Chem. C **123**, 5634–5641 (2019).

280. Steven Larson, Daniel Carlson, Bin Ai, and Yiping Zhao, "*The extraordinary optical transmission and sensing properties of Ag/Ti composite nanohole arrays*," Phys. Chem. Chem. Phys. **21**, 3771 –3780 (2019).

279. Steven Larson, Zilan Yang, and Yiping Zhao, "*Improving LSPR sensing performance using multilayered composition graded Ag–Cu nanotriangle arrays*," Chem. Comm. **55**, 1342 – 1344 (2019).

278. L. Zhu, W. Huang, F. Yang, L. Yin, S. Liang, W. Zhao, L. Mao, X. Yu, R. Qiao, and Y. Zhao, "*Manipulation of single cells using a ferromagnetic nanorod cluster actuated by weak AC magnetic fields*," Adv. Biosystems, **DOI:** 10.1002/adbi.201800246 (2019).

277. Bin Ai and Yiping Zhao, "*Glancing angle deposition meets colloidal lithography: a new evolution in the design of nanostructures*," Nanophotonics, **DOI:** 10.1515/nanoph-2018-0105 (2018).

276. Jiangnan Hu, Shengwei Huang, Lu Zhu, Weijie Huang, Yiping Zhao, Kunlin Jin, Qichuan ZhuGe, "*Tissue plasminogen activator-porous magnetic microrods for targeted thrombolytic therapy after ischemic stroke*," ACS Appl. Mater. Interfaces **10**, 32988 – 32997 (2018).

275. Bin Ai, Chunyuan Song, Layne Bradley, and Yiping Zhao, "*Strong Fano resonanceexcited in an array of nanoparticle-in-ring nanostructures for dual plasmonic sensor applications*," J. Phys. Chem. C **122**, 20935 – 20944 (2018).

274. Caiqin Han, Dexian Ye, Yiping Zhao. and Junxue Fu, "*Physical vapor deposition of Ag nanoparticles through shadowing and re-emission effects*," J. Vac. Sci. Technol. B **36**, 051802 (2018).

273. Bin Ai, Steven Larson, Layne Bradley, and Yiping Zhao, "*A flexible strategy to fabricate gradient plasmonic nanostructures,*" Advanced Materials Interfaces, DOI: 10.1002/admi.201800975 (2018).

272. Hoang Mai Luong, Bin Ai, Yiping Zhao, Tho Duc Nguyen, "*Weak enhanced resonant Faraday rotation in pure cobalt plasmonic lattices: Thickness dependent Faraday rotation studies*," Journal of Magnetism and Magnetic Materials **468**, 79 – 84 (2018).

271. Rui Cheng, Lu Zhu, Weijie Huang, Leidong Mao, and Yiping Zhao, "*Reconfiguring ferromagnetic microrod chains by alternating two orthogonal magnetic fields*," Journal of Physics: Condensed Matter **30**, 315101 (2018).

270. Hong-Kai Dai, Cheng-Bei Xie, Hui-Chao Liang, Lin-Yong Qian, Cai-Qin Han, Chang-Chun Yan, and Yi-Ping Zhao, "*Growth and optical properties of Ag-Ti composite nanorods based on oblique angle co-deposition technique*," Optics Express **26**, 12022 – 12037 (2018).

269. Liuyang Zhang, Lu Zhu, Steven R. Larson, Yiping Zhao, and Xianqiao Wang, "*Layer-by-layer assembly of nanorods on a microsphere via electrostatic interactions*," Soft Matter **14**, 4541 – 4550 (2018).

268. Hong-Feng Wang, Jun-Xian Shi, Lin-Yong Qian, Chang-Chun Yan, Cai-Qin Han, and Yi-Ping Zhao, "*Large-area broadband optical absorber fabricated by shadowing sphere lithography*," Optics Express **26**, 7507 – 7515 (2018).

267. Steven R Larson and Yiping Zhao, "*The localized surface plasmonic resonance and sensing properties of Ag-MgF_2 composite nanotriangles*," J. Phys. Chem. C **122**, 7374 – 7381 (2018).

266. Yizhuo He, Xinghai Wang, Whitney Ingram, Bin Ai, and Yiping Zhao, "*Optimized fan-shaped chiral metamaterial as an ultrathin narrow-band circular polarizer at visible frequencies*," Nanotechnology **29**, 095301 (2018).

265. Connor Skehan, Bin Ai, Steven Larson, Keenan Stone, William Dennis, and Yiping Zhao, "*Plasmonic and SERS performances of compound nanohole arrays fabricated by shadow sphere lithography*," Nanotechnology **29**, 095301 (2018).

264. Hansol Lee, Jaya Sundaram, Lu Zhu, Yiping Zhao, and SudhagarMani, "*Improved thermal stability of cellulose nanofibrils using low-concentration alkaline pretreatment*," Carbohydrate Polymers **181**, 506 – 513 (2018).

263. Bin Ai, Pradip Basnet, Steven Larson, Whitney Ingram, and Yiping Zhao, "*Plasmonic sensor with high figure of merit based on differential polarization spectra of elliptical nanohole array*," Nanoscale **9**, 14710 – 14721 (2017).

262. Liuyang Zhang, Yiping Zhao, and Xianqiao Wang, "*Nanoparticle-mediated mechanical destruction of cell membranes: a coarse-grained molecular dynamics study*," ACS Appl. Mater. Interfaces **9**, 26665 – 26673 (2017).

261. Jing Chen, Bosoon Park, Yao-wen Huang, Yiping Zhao, and Yongkuk Kwon, "*Label-free SERS detection of Salmonella Typhimurium on DNA aptamer modified AgNR substrates*," Journal of Food Measurement and Characterization **11**, 1773 – 1779 (2017).

260. Weijie Huang, Fengchang Yang, Lu Zhu, Rui Qiao, and Yiping Zhao, "*Manipulation of magnetic nanorod clusters in liquid by non-uniform alternating magnetic fields*," Soft Matter **13**, 3750 – 3759 (2017).

259. Caiqin Han, Yue Yao, Wen Wang, Lulu Qu, Layne Bradley, Shulin Sun, and Yiping Zhao, "*Rapid and sensitive detection of Sodium Saccharin in soft drinks by Silver nanorod array SERS substrates*," Sensors and Actuators B **251**, 272 – 279 (2017).

258. Caiqin Han, Yuqi Li, Qin Jia, Layne Hyer Bradley, Yun Gan, Yue Yao, Lulu Qu, Haitao Li, and Yiping Zhao, "*On-demand fabrication of surface-enhanced Raman scattering arrays by pen writing, and their application to the determination of melamine in milk*," Microchimica Acta **184**, 2909 – 2917 (2017)

257. Fengchang Yang, Manoj Manjare, Yiping Zhao, Rui Qiao, "*On the peculiar bubble formation, growth, and collapse behaviors in catalytic micromotor systems*," Microfluidics and Nanofluidics **21**, 1 – 11 (2017).

256. Whitney Ingram, Steven Larson, Daniel Carlson, and Yiping Zhao, "*Ag-Cu mixed phase plasmonic nanostructures fabricated by shadow nanosphere llithography and glancing angle co-deposition*," Nanotechnology 28, 015301 (2017).

255. Lu Zhu, Weijie Huang, Zachary S. Rinehart, Jason Tam, and Yiping Zhao, "*Multifunctional Iron Oxide – Carbon hybrid microrods*," RSC Advance **6**, 98845 – 98853 (2016).

254. Rui Cheng, Lu Zhu, Weijie Huang, Leidong Mao, and Yiping Zhao, "*Dynamic scaling of ferromagnetic micro-rod clusters under a weak magnetic field*," Soft Matter, **12**, 8440 – 8447 (2016).

253. Yanjun Yang, Chunyuan Song, Boyue Yang, Youzhi Sun, Yiping Zhao, and Lianhui Wang, "*Ultrasensitive SERS sensor for simultaneous detection of multiple cancer-related miRNAs*," Nanoscale **8**, 17365 – 17373 (2016).

252. Jie Cheng, Xiao-Ou Su, Shi Wang, and Yiping Zhao, "*Highly sensitive detection of Clenbuterol in animal urine using immunomagnetic bead treatment and surface-enhanced Raman spectroscopy*," Scientific Reports **6**, 32637 (2016).

251. Whitney Ingram, Yizhuo He, Dexian Ye, Keenan Stone, William Dennis, and Yiping Zhao, "*Tuning the plasmonic properties of Silver nanopatterns fabricated by shadow nanosphere lithography*," Nanotechnology **27**, 385301 (2016).

250. Steven Larson, Weijie Huang, and Yiping Zhao, "*Combinatorial fabrication of composite nanorods using oblique angle co-deposition*," Nanotechnology **27,** 365304 (2016).

249. Jitto Titus, George Larsen, Yiping Zhao, and A. G. Unil Perera, "*Large circular dichroism and optical rotation in titanium doped chiral silver nanorods*," Annalen der Physik, DOI: 10.1002/andp.201600103 (2016).

248. Layne Bradley, George Larsen, and Yiping Zhao, "*Designed to fail – flexible, anisotropic Silver nanorod sheets for low-cost wireless activity monitoring*," Journal of Physical Chemistry C **120**, 14969 – 14976 (2016).

247. Jie Cheng, Xiao-Ou Su, Yue Yao, Caiqin Han, Shi Wang, and Yiping Zhao, "*Highly sensitive detection of Melamine using a one-step sample treatment combined with a portable Ag nanostructure array SERS sensor*," PLoS ONE **11**, e0154402 (2016).

246. Fengchang Yang, Shizhi Qian, Yiping Zhao, and Rui Qiao, "*Self-diffusiophoresis of Janus catalytic micromotors in confined geometries*," Langmuir **32**, 5580 – 5592 (2016).

245. Layne Bradley and Yiping Zhao, "*Uniform plasmonic response of colloidal Ag patchy particles prepared by swinging oblique angle deposition*," Langmuir **32**, 4969 – 4974 (2016).

244. Jiangnan Hu, Weijie Huang, Shengwei Huang, Qichuan ZhuGe, Kunlin Jin, and Yiping Zhao, "*Magnetically active Fe_3O_4 nanorods loaded with tissue Plasminogen activator for enhanced thrombolysis*," Nano Research **9**, 2652 – 2661 (2016).

243. Steven Larson and Yiping Zhao, "*Tuning the composition of Bi_xW_yO nanorods towards zero bias PEC water splitting*," Nanotechnology **27**, 255401 (2016).

242. Lu Zhu, Pradip Basnet, Steven R. Larson, Les P. Jones, Jane Y. Howe, Ralph A. Tripp, and Yiping Zhao, "*Visible light-induced photoeletrochemical and antimicrobial properties of hierarchical CuBi2O4 by facile hydrothermal synthesis*," ChemistrySelect **1**, 1518 – 1524 (2016).

241. Mohammed Meziani, Xiuli Dong, Lu Zhu, Les Jones, Gregory LeCroy, Fan Yang, Shengyuan Wang, Ping Wang, Yiping Zhao, Liju Yang, Ralph Tripp, and Ya-Ping Sun, "*Visible-light-activated bactericidal functions of carbon quantum dots*," ACS Applied Materials & Interfaces **8**, 10761 – 10766 (2016).

240. F. Chen, B. R. Flaherty, C. E. Cohen, D. S. Peterson, and Y. Zhao, "*Direct detection of malaria infected red blood cells by surface enhanced Raman spectroscopy*," Nanomedicine: Nanotechnology, Biology, and Medicine **12**, 1445 – 1451 (2016).

239. Kun Yao, Pradip Basnet, Henry Sessions, Simona E. Hunyadi Murph, and Yiping Zhao, "*Fe_2O_3-TiO_2 core-shell nanorod arrays for visible light*," Catalysis Today **270**, 51 – 58 (2016).

238. Yizhuo He, Keelan Lawrence, Whitney Ingram, and Y.-P. Zhao, "*Circular dichroism based refractive index sensing using chiral metamaterials*," Chem. Commun. **52**, 2047 – 2050 (2016).

237. Xiaomeng Wu, Caiqin Han, Jing Chen, Yao-wen Huang, and Yiping Zhao, "*Rapid detection of pathogenic bacteria from fresh produce by filtration and surface enhanced Raman spectroscopy*," JOM **68**, 1156 – 1162 (2016).

236. Pradip Basnet and Yiping Zhao, "*Tuning the Cu_xO nanorod composition for efficient visible light induced photocatalysis*," Catalysis Science & Technology **6**, 2228 – 2238 (2016).

235. E. N. Huddleston, A. Roy, J. A. Bilbrey, Y. Zhao, and J. Locklin, "*Functionalization of reactive end groups in surface-initiated Kumada catalyst-transfer polycondensation*," Macromol. Symp. **351**, 27 –36 (2015).

234. Manoj Manjare, Fengchang Yang, Rui Qiao, Yiping Zhao, "*Marangoni flow induced collective motion of catalytic micromotors*," Journal of Physical Chemistry C **119**, 28361 – 28367 (2015).

233. Whitney Ingram, Caiqin Han, Qiuju Zhang, and Yiping Zhao, "*Optimization of Ag coated polystyrene nanosphere substrates for quantitative surface enhanced Raman spectroscopy analysis*," Journal of Physical Chemistry C **119**, 27639 – 27648 (2015).

232. George K. Larsen, Nicholas Stom, and Yiping Zhao, "*Continuously tuning the spectral response of chiral plasmonic patchy particles through galvanic replacement reaction*," RSC Advances **5**, 101257 – 101261 (2015).

231. Yizhuo He, Keelan Lawrence, Whitney Ingram, and Yiping Zhao, "*Strong local chiroptical response in racemic patchy Silver films: enabling a large-area chiroptical device*," ACS Photonics **2**, 1246 –1252 (2015).

230. Y.-T. Wu, B. Yang, and Y.-P. Zhao, "*Thermophoresis of aerosol particles in near-critical vapor: An inverse size effect*," Appl. Phys. Lett. **106**, 251605 (2015).

229. S. C. DeCaluwe, B. M. Dhar, L. Huang, Y. He, K. Yang, J. P. Owejan, Y. P. Zhao, A. A. Talin, J. A. Dura and H. Wang, "*Pore collapse and regrowth in silicon electrodes for rechargeable batteries*," Physical Chemistry Chemical Physics **17**, 11301 – 11312 (2015).

228. X. M. Wu, Y.-W. Huang, B. Park, R. A. Tripp, and Y. P. Zhao, "*Differentiation and classification of bacteria using Vancomycin functionalized Silver nanorod array based surface-enhanced Raman spectroscopy and chemometric analysis*," Talanta **139**, 96 – 103 (2015).

227. Jing Chen, Yaowen Huang, and Yiping Zhao, "*Detection of Polycyclic Aromatic Hydrocarbons from cooking oil using ultra-thin layer chromatography and surface enhanced Raman spectroscopy*," Journal of Materials Chemistry B **3**, 1898 – 1906 (2015).

226. Bingyun Ao, Tao Tang, Zhengjun Zhang, and Yiping Zhao, "*Roles of Cu concentration in the photocatalytic activities of Cu-doped TiO_2 from GGA + U calculations*," Solid State Communications **204**, 23 – 27 (2015).

225. Yizhuo He, George Larsen, Xibo Li, Whitney Ingram, Funing Chen, and Yiping Zhao, "*Nanoscale conical Swiss roll with broadband visible and near-IR circular dichroism,*" Advanced Optical Materials **3**, 342 – 346 (2015).

224. Jing Chen, Yao-wen Huang, and Yiping Zhao, "*Characterization of polycyclic aromatic hydrocarbons using Raman and surface enhanced Raman spectroscopy*," Journal of Raman Spectroscopy **46**, 64 – 69 (2015).

223. Xenia Meshik, Xiaomeng Wu, Yiping Zhao, Joel Schwartz, Mitra Duttaf, and Michael Stroscioa, "*SERS spectrum of the peptide thymosin-β4 obtained with Ag nanorod substrate*," Journal of Raman Spectroscopy **46**, 194 – 196 (2015).

222. Yiping Zhao, "*Dynamic shadowing growth and its energy applications*," Frontiers in Energy Research, DOI: 10.3389/fenrg.2014.00038 (2014).

221. Chunyuan Song, Jing Chen, Yiping Zhao, and Lianhui Wang, "*Gold-modified silver nanorod arrays for SERS-based immunoassays with improved sensitivity,*" Journal of Materials Chemistry B, **2**, 7488 – 7494 (2014).

220. George K. Larsen and Yiping Zhao, "*Extracting the anisotropic optical parameters of chiral plasmonic nanostructured thin films using generalized ellipsometry*," Appl. Phys. Lett. **105**, 071109 (2014).

219. Rui Cheng, Weijie Huang, Lijie Huang, Bo Yang, Leidong Mao, Kunlin Jin, Qichuan Zhuge, and Yiping Zhao, "*Acceleration of tissue plasminogen activator mediated thrombolysis by magnetically powered nanomotors*," ACS Nano **8**, 7746 – 7754 (2014).

218. George K. Larsen, Yizhuo He, Whitney Ingram, Ethan T. LaPaquette, Jing Wang, and Yiping Zhao, "*The fabrication of three-dimensional plasmonic chiral structures by dynamic shadowing growth*," Nanoscale **6**, 9467 – 9476 (2014).

217. Xiaomeng Wu, Jing Chen, Xibo Li, Yiping Zhao, and Susu M. Zughaier, "*Culture-free diagnostics of Pseudomonas aeruginosa infection by silver nanorod array based SERS from clinical sputum samples*," Nanomedicine: Nanotechnology, Biology, and Medicine **10**, 1863 – 1870 (2014).

216. Caiqin Han, Jing Chen, Xiaomeng Wu, Yao-wen Huang, and Yiping Zhao, "*Detection of Metronidazole and Ronidazole from environmental samples by surface enhanced Raman spectroscopy*," Talanta **128**, 293 – 298 (2014).

215. Yizhuo He, George Larsen, Whitney Ingram, and Yiping Zhao, "*Tunable 3D helically stacked plasmonic layers on nanosphere monolayers*," Nano Letters **14**, 1976 – 1981 (2014).

214. Yuan Ting Wu, Yiping Zhao, and Bo Yang, "*Force-moment line element method for Stokes flow around a slender body*," Engineering Analysis with Boundary Elements **44**, 120 – 129 (2014).

213. Kun Yao, Ryan Toole, Pradip Basnet, and Yiping Zhao, "*Highly sensitive double-layered nanorod array gas sensors prepared by oblique angle deposition*," Appl. Phys. Lett. **104**, 073110 (2014).

212. Manoj Manjare, Yuan Ting Wu, Bo Yang, and Yiping Zhao, "*Hydrophobic catalytic Janus motors: slip boundary condition and enhanced catalytic reaction rate*," Appl. Phys. Lett. **104**, 054102 (2014).

211. George K. Larsen, Yizhuo He, Jin Wang, and Yiping Zhao, *"Scalable fabrication of composite Ti/Ag plasmonic helices: controlling morphology and optical activity by tailoring material properties*," Adv. Opt. Mat. **2**, 245 – 249 (2014).

210. Justin L. Abell, Jeremy D. Driskell, and Y.-P. Zhao, "*Controllable and reversible hot spot formation on Silver nanorod arrays*," Chem. Com. **50**, 106 – 108 (2014).

209. Bingyun Ao, Zhengjun Zhang, Tao Tang, and Yiping Zhao, "*Potential enhancement of superconductivity in MgB_2 nanosheets: First-principles calculations*," Chem. Phys. Lett. **591**, 185 –188 (2014).

208. Pradip Basnet and Yiping Zhao, "*Superior dye adsorption capacity of amorphous WO_3 sub-micrometer rods fabricated by glancing angle deposition*," Journal of Materials Chemistry A **2**, 911 – 914 (2014).

207. George Larsen, Yizhuo He, Whitney Ingram, and Yiping Zhao, "*Hidden chirality in superficially racemic patchy Silver films*," Nano Lett. **13**, 6228 – 6232 (2013).

206. Yizhuo He, Pradip Basnet, Simona Murph, and Yiping Zhao, "*Ag nanoparticle embedded TiO_2 composite nanorod arrays fabricated by oblique angle deposition: toward plasmonic photocatalysis*," ACS Applied Materials & Interfaces **5**, 11818 – 11827 (2013).

205. Jing Chen, Xiaomeng Wu, Yao-wen Huang, and Yiping Zhao, "*Detection of E. coli using SERS active filters with Silver nanorod array*," Sensors and Actuators B**191**, 485 – 490 (2013).

204. G. K. Larsen and Y. P. Zhao, "*Buckle-driven delamination of hydrophobic micro-, nano-, and heterostructured membranes without a sacrificial layer*," Nanoscale **5**, 10853 – 10857 (2013).

203. Weijie Huang, Manoj Manjare, and Yiping Zhao, "*Catalytic nanoshell micromotors*," J. Phys. Chem. C **117**, 21590 – 21596 (2013).

202. Bingyun Ao, Z. J. Zhang, Y. P. He, and Y. P. Zhao, "*Semiconducting ground-state of three polymorphs of Mg_2NiH_4 from first-principles calculations*," International Journal of Hydrogen Energy **38**, 16471 – 16476 (2013).

201. Yizhuo He, Junxue Fu, and Yiping Zhao, "*Oblique angle deposition and its applications in plasmonics*," Frontiers of Physics **9**, 47 – 59 (2013).

200. C. Y. Song, G. K. Larsen, and Y.-P. Zhao, "*Anisotropic resistivity of tilted Silver nanorod arrays: experiments and modeling*," Appl. Phys. Lett. **102**, 233101 (2013).

199. Wei Cao, Chunyuan Song, Thomas E. Lanier, Ranjan Singh, John F. O'Hara, William M. Dennis, Yiping Zhao, and Weili Zhang, "*Tailoring terahertz plasmons with silver nanorod arrays,*" Scientific Reports **3**, DOI:10.1038/srep01766 (2013).

198. Xiaomeng Wu, Chao Xu, Ralph A. Tripp, Yao-wen Huang, and Yiping Zhao, "*Detection and differentiation of foodborne pathogenic bacteria in mung bean sprouts using field deployable label-free SERS devices*," Analyst **138,** 3005 – 3012 (2013).

197. Pradip Basneta, George K. Larsena, Ravirajsinh P. Jadeja, Yen-Con Hung, and Yiping Zhao, "*α-Fe_2O_3 nanocolumns and nanorods fabricated by electron beam evaporation for visible light photocatalytic and antimicrobial applications*," ACS App. Mater. Interfaces **5,** 2085 – 2095 (2013).

196. Manoj Manjare, Bo Yang, and Yiping Zhao, "*Bubble propelled microjets: model and experiment*," J. Phys. Chem. C **117**, 4657 – 4665 (2013).

195. Yingchao Yang, Yuping He, Yiping Zhao, and Xiaodong Li, "*Mechanically robust Si nanorod arrays on Cu/Ti bilayer film coated Si substrate for high performance lithium-ion battery anodes*," J. Appl. Phys. **112**, 103502 (2012).

194. R. C. Jayasinghe, A. G. U. Perera, H. Zhu, and Y. Zhao, "*Optical properties of nanostructured TiO_2 thin films and their application as antireflection coatings on infrared detectors*," Opt. Lett. **37**, 4302 –4304 (2012).

193. J.P. Singh, Thomas E. Lanier, Hao Zhu, William M. Dennis, Ralph A. Tripp, and Yiping Zhao, "*Highly sensitive and transparent surface enhanced Raman scattering substrates made by active coldly condensed Ag nanorod arrays*," J. Phys. Chem. C **116**, 20550 (2012).

192. Manoj Manjare, Bo Yang, and Y.-P. Zhao, "*Bubble driven quasi-oscillatory translational motion of catalytic micromotors*," Phys. Rev. Lett. **109**, 128305 (2012).

191. Yuping He, Cameron Brown, Cynthia A. Lundgren, and Yiping Zhao, "*The growth of CuSi composite nanorod arrays by oblique angle co-deposition, and their structural, electrical, and optical properties*," Nanotechnology **23**, 365703 (2012).

190. Kun Yao, Manoj Manjare, Christopher Barrett, Bo Yang, Tina Salguero, Yiping Zhao, "*Nanostructured scrolls from graphene oxide for microjet engines*," J. Phys. Chem. Lett. **3**, 2204 –2208 (2012).

189. Justin Abell, Jeonifer Garren, Jeremy Driskell, Ralph Tripp, and Yiping Zhao, "*Label-free detection of microRNA hybridization using surface-enhanced Raman spectroscopy (SERS) and least-squares analysis*," J. Amer. Chem. Soc. **134**, 12889 – 12892 (2012).

188. Xiaomeng Wu, Simin Gao, Jia-Sheng Wang, Hongyan Wang, Yao-Wen Huang, Yiping Zhao, "*The surface-enhanced Raman spectra of Aflatoxins: spectral analysis, density functional theory calculation, detection and differentiation*," Analyst **137**, 4226 – 4234 (2012).

187. Yuping He, Cameron Brown, Yizhuo He, Jianguo Fan, Cynthia A. Lundgren, and Yiping Zhao, "*Porous three-dimensional nanorod arrays through selective chemical etching of nanocomposites*," Chem. Com. **48**, 7741 – 7743 (2012).

186. George K. Larsen, Bob C. Fitzmorris, Claudia Longo, Jin Z. Zhang, and Yiping Zhao, "*Nanostructured homogenous CdSe/TiO_2 composite visible light photoanodes fabricated by oblique angle codeposition*," Journal of Materials Chemistry **22**, 14205 – 14218 (2012).

185. Jing Chen, J. Abell, Y.-W. Huang, and Y.-P. Zhao, "*On-chip ultra-thin layer chromatography and surface enhanced Raman spectroscopy*," Lab on a Chip **12**, 3096 – 3102 (2012).

184. Hao Zhu, Wei Cao, George K. Larsen, Ryan Toole, and Yiping Zhao, "*Tilting angle of nanocolumnar films fabricated by oblique angle deposition*," Journal of Vacuum Science and Technology B **30**, 030606 (2012).

183. J. P. Singh, HsiaoYun Chu, Justin Abell, Ralph A. Tripp, and Yiping Zhao, "*Flexible and mechanical strain resistant large area SERS active substrates,*" Nanoscale **4**, 3410 – 3414 (2012).

182. Bo Yang, Juraj Irsa, Yuping He, Cynthia Lundgren, and Yiping Zhao, "*A chemoelastoplastic analysis of anisotropic swelling in a SnO_2 nanowire under lithiation*," Journal of Engineering Materials and Technology **134**, 031013 (2012).

181. Qin Zhou, Xian Zhang, Yu Huang, Zhengcao Li, Yiping Zhao, and Zhengjun Zhang, "*Enhanced SERS performance by folding Silver nanorods*," Appl. Phys. Lett. **100**, 113101 (2012).

180. Aisha Leh, Hartmann N'guessan, Jianguo Fan, Prashant Badahur, Rafael Tadmor, Yiping Zhao, "*On the role of the three-phase contact line in surface deformation*," Langmuir **28**, 5795 – 5801 (2012).

179. Yuping He, Bo Yang, Kaikun Yang, Cameron Brown, Ramaraja Ramasamy, Howard Wang, Cynthia Lundgren, and Yiping Zhao, "*Designing Si-based nanowall arrays by dynamic shadowing growth to tailor the performance of Li-ion battery anodes*," Journal of Materials Chemistry **22**, 8294 – 8303 (2012).

178. R. Fitzmorris, G. Larsen, D. Wheeler, Y.-P. Zhao, and J. Zhang, "*Ultrafast charge transfer dynamics in polycrystalline CdSe/TiO_2 nanorods prepared by oblique angle co-deposition*," J. Phys. Chem. C **116**, 5033 – 5041 (2012).

177. Y.-P. Zhao, Y.-P. He, and C. Brown, "*Composition dependent nanocolumn tilting angle during the oblique angle co-deposition*," Appl. Phys. Lett. **100**, 033106 (2012).

176. Suzanne Hennigan, Jeremy Driskell, Naola Ferguson-Noel, Richard Dluhy, Yiping Zhao, Ralph Tripp, and Duncan Krause, "*Detection and differentiation of Avian Mycoplasmas by surface-enhanced Raman spectroscopy based on Silver nanorod array*," Applied and Environmental Microbiology **78**, 1930 – 1935 (2012).

175. Bo Yang, Yuping He, Juraj Irsa, Cynthia Lundgren, Joshua Ratchford, and Yiping Zhao, "*Effects of composition-dependent modulus, finite concentration and boundary constraint on Li-ion diffusion and stresses in a bilayer Cu-coated Si nano-anode*," Journal of Power Sources **204**, 168 – 176 (2012).

174. X. J. Wang, J. L. Abell, Y.-P. Zhao, and Z. M. Zhang, "*Angle-resolved reflectance of obliquely aligned silver nanorods*," Applied Optics **51**, 1521 – 1531 (2012).

173. X. J. Wang, A. M. Haider, J. L. Abell, Y.-P. Zhao, and Z. M. Zhang, "*Anisotropic diffraction from inclined Silver nanorod arrays on grating templates*," Nanoscale and Microscale Thermophysical Engineering **16**, 18 – 36 (2012).

172. C.-Y. Song, J. Chen, J. L. Abell, Y.-P. Cui, and Y.-P. Zhao, "*Ag-SiO_2 core-shell nanorod arrays: morphological, optical, SERS, and wetting properties*," Langmuir **28**, 1488 – 1495 (2012).

171. C.-Y. Song, J. L. Abell, Y. -P. He, S. H. Murph, Y. -P. Cui, and Y. -P. Zhao, "*Gold-modified Silver nanorod arrays: growth dynamics and improved SERS properties*," Journal of Materials Chemistry **22**, 1150 – 1159 (2012).

170. Justin Abell, Joonsang Lee, Qun Zhao, Harold Szu, and Yiping Zhao, "*Differentiating intrinsic SERS spectra from a mixture by sampling induced composition gradient and independent component analysis*," Analyst **137**, 73 – 76 (2012).

169. Bo Yang, Yuping He, and Yiping Zhao, "*Concentration-dependent hydrogen diffusion in hydrogenation and dehydrogenation of vanadium-coated magnesium nanoblades*," International Journal of Hydrogen Energy **36**, 15642 – 15651 (2011).

168. Ming Au, Yuping He, Yiping Zhao, Hessam Ghassemi, Reza Shahbazian Yassar, Brenda Garcia-Diaz, and Thad Adams, "*Silicon and silicon–copper composite nanorods for anodes of Li-ion rechargeable batteries*," J. Power Sources **196**, 9640 – 9647 (2011).

167. George Larsen, Robert Carl Fitzmorris, Jin Z. Zhang, and Yiping Zhao, "*Structural, optical, and photocatalytic properties of Cr:TiO_2 nanorod array fabricated by oblique angle co-deposition*," J. Phys. Chem. C **115**, 16892 – 16903 (2011).

166. Qin Zhou, Yuping He, Justin Abell, Zhengjun Zhang, and Yiping Zhao, "*Optical properties and surface enhanced Raman scattering of L-shaped silver nanorod arrays*," J. Phys. Chem. C **115**, 14131 – 14140 (2011).

165. Wilson Smith, Abraham Wolcott, Robert Carl Fitzmorris, Jin Z. Zhang, and Yiping Zhao, "*Quasi-core-shell TiO_2/WO_3 and WO_3/TiO_2 nanorod arrays fabricated by glancing angle deposition for solar water splitting*," Journal of Materials Chemistry **21**, 10792 – 10800 (2011).

164. John Gibbs, Shrenik Kothari, David Saintillan, and Yiping Zhao, "*Geometrically designing the kinematic behavior of catalytic nanomotors*," Nano Letters **11**, 2543 – 2550 (2011).

163. J. L. Abell, J.M. Garren, and Y.-P. Zhao, "*Dynamic rastering SERS measurements on silver nanorod substrates*," Applied Spectroscopy **65**, 734 – 740 (2011).

162. Yu. Zhu, R. A. Dluhy, and Y.-P. Zhao, "*Development of Silver nanorod array based fiber optic probes for SERS detection*," Sensors & Actuators B **157**, 42 – 50 (2011).

161.Y.-P. He and Y.-P. Zhao, "*Advanced multi-component nanostructures designed by dynamic shadowing growth*," Nanoscale **3**, 2361 – 2375 (2011).

160. Bo Yang, Y.-P. He, and Y.-P. Zhao, "*Hydrogenation of magnesium nanoblades: the effect of concentration dependent hydrogen diffusion*," Appl. Phys. Lett. **98**, 081905 (2011).

159. Z.-Y. Zhang and Y.-P. Zhao, "*The visible extinction peaks of Ag nano-helixes: a periodic effective dipole model*," Appl. Phys. Lett., **98**, 083102 (2011).

158. Qin Zhou, Yuping He, Justin Abell, Zhengjun Zhang, and Yiping Zhao, "*Surface-enhanced Raman scattering from helical silver nanorod arrays*," Chem Comm. **47**, 4466 – 4468 (2011).

157. John G. Gibbs and Yiping Zhao, "*Catalytic nanomotors: fabrication, mechanism, and applications*," Frontiers of Materials Science **5**, 25–39 (2011).

156. John G. Gibbs, Nicholas A. Fragnito, and Yiping Zhao, "*Asymmetric Pt/Au coated catalytic micromotors fabricated by dynamic shadowing growth*," Appl. Phys. Lett. **97**, 253107 (2010).

155. Suzanne L. Hennigan, Jeremy D. Driskell, Richard A. Dluhy, Yiping Zhao, Ralph A. Tripp, and Duncan C. Krause, "*Detection of Mycoplasma pneumoniae in throat swab specimens by nanorod array-surface-enhanced Raman spectroscopy,"* PLoS One **5**, e13633 (2010).

154. Yuping He, Jianguo Fan, and Yiping Zhao, "*Engineering a well-aligned composition-graded CuSi nanorod array by an oblique angle co-deposition technique*," Crystal Growth & Design **10**, 4954 –4958 (2010).

153. Qin Zhou, Yongjun Liu, Yuping He, Zhengjun Zhang, and Yiping Zhao, "*The effect of underlayer thin films on the surface-enhanced Raman scattering response of Ag nanorod substrates*," Appl. Phys. Lett. **97**, 121902 (2010).

152. Chien Y. Lin, Yun H. Wang, Jung Y. Huang, Yongjun Liu and Yiping Zhao, "*Impact of electric quadrupolar coupling on the optical response of an array of nano-objects,*" J. Phys.: Condens. Matter **22**, 225301 (2010).

151. Xiaobing Du, Hsiaoyun Chu, Yaowen Huang, and Yiping Zhao, "*Qualitative and quantitative determination of Melamine by surface enhanced Raman spectroscopy using silver nanorod array substrates*," Applied Spectroscopy **64**, 781 – 785 (2010).

150. Hang Liu, Karen K. Leonas, and Yiping Zhao, "*Antimicrobial properties and release profile of Ampicillin from electrospun Poly(ε-caprolactone) nanofiber yarns*," Journal of Engineered Fibers and Fabrics **5**, 10 (2010).

149. J. Gibbs and Y.-P. Zhao, "*Self-organized multi-constituent catalytic nanomotors*," Small **6**, 1656 –1662 (2010).

148. Yongjun Liu, Hsiao Chu, and Yiping Zhao, "*Silver nanorod array substrates fabricated by oblique angle deposition: morphological, optical and SERS characterizations*," J. Phys. Chem. C **114**, 8176 –8183 (2010).

147. Jeremy D. Driskell, Yu Zhu, Carl D. Kirkwood, Yiping Zhao, Richard A. Dluhy, and Ralph A. Tripp, "*Rapid and sensitive detection of Rotavirus molecular signatures using surface enhanced Raman spectroscopy,*" PLoS One **5**, e10222 (2010).

146. J.-X. Fu and Y.-P. Zhao, "*Au nanoparticle based localized surface plasmon resonance substrates fabricated by dynamic shadowing growth*," Nanotechnology **21**, 175303 (2010).

145. J. G. Fan and Y.-P. Zhao, "*Nanocarpet effect induced superhydrophobicity*," Langmuir **26**, 8245 –8250 (2010).

144. Z. Z. Wu， William S. Kisaalita, Lina Wang, Angela L. Zachman, Yiping Zhao, Kowser Hasneen, Dave Machacek, and Steven L. Stice, "*Effects of topography on the functional development of human neural progenitor cells*," Biotechnology and Bioengineering **106**, 649 – 659 (2010).

143. Y.-P. He, J. G. Fan, and Y.-P. Zhao, "*The role of differently distributed vanadium nanocatalyst in the hydrogen storage of magnesium nanostructures*," International Journal of Hydrogen Energy **35**, 4162 – 4170 (2010).

142. S. Tangirala, D. P. Landau, and Y.-P. Zhao, "*Dynamic scaling study of vapor deposition polymerization: a Monte Carlo approach*," Phys. Rev. E **81**, 011605 (2010).

141. Y.-J. Liu, Z.-Y. Zhang, R. A. Dluhy, and Y.-P. Zhao, "*The SERS response of semiordered Ag nanorod arrays fabricated by template oblique angle deposition*," Journal of Raman Spectroscopy 41, 1112 – 1118 (2010).

140. Xiangwen Chen, Yuping He, Yiping Zhao, and Xinwei Wang， "*Thermophysical properties of hydrogenated vanadium-doped magnesium porous nanostructures,*" Nanotechnology **21**, 055707 (2010).

139. Ming Au, Scott McWhorter, Thad Adams, John Gibbs, and Yiping Zhao, "*Free standing aluminum nanostructures as anodes of Li-Ion rechargeable batteries*," J. Power Sources **195**, 3333 – 3337 (2010).

138. Wilson Smith, Shun Mao, Ganhua Lu, Alexis Catlett, Junhong Chen, and Yiping Zhao, "*The effect of Ag nanoparticle loading on the photocatalytic activity of TiO_2 nanorod arrays*," Chemical Physics Letters **485**, 171 – 175 (2010).

137. Y.-P. He and Y.-P. Zhao, "*Mg nanostructures tailored by glancing angle deposition,*" Crystal Growth & Design **10**, 440 – 448 (2010).

136. J. Driskell, O. Primera-Pedorozo, R. Dluhy, Y.-P. Zhao, and R. Tripp, "*Quantitative SERS-based analysis of microRNA mixtures*," Applied Spectroscopy **63**, 1107 – 1114 (2009).

135. W. Smith, W. Ingram, and Y.-P. Zhao, "*The scaling of the photocatalytic decay rate with the length of aligned TiO_2 nanorod arrays*," Chem. Phys. Lett. **479**, 270 – 273 (2009).

134. J.-X. Fu, B. Park, and Y.-P. Zhao, "*Nanorod mediated surface plasmon resonance sensor based on effective medium theory*," Applied Optics **48**, 4637 – 4649 (2009).

133. J.-X. Fu, B. Park, and Y.-P. Zhao, "*Limitation of a localized surface plasmon resonance sensor for Salmonella detection*," Sensors & Actuators B **141**, 276 – 283 (2009).

132. John Gibbs and Y.-P. Zhao, "*Design and characterization of rotational multicomponent catalytic nanomotors*," Small **5**, 2304 – 2308 (2009).

131. Justin Abell, J. D. Driskell, R. A. Tripp, R. A. Dluhy, and Y.-P. Zhao, "*Fabrication and characterization of a multi-well array SERS chip with biological applications*," Biosensors and Bioelectronics **24**, 3663 – 3670 (2009).

130. L. N. Wang, Z. Z. Wu, B. Q. Xu, Y.-P. Zhao, and W. Kisaalita, "*SU-8 microstructure for quasi-three-dimensional cell-based biosensing*," Sensors & Actuators B **140**, 349 – 355 (2009).

129. Y.-J. Liu, Z.-Y. Zhang, Q. Zhao, R. Dluhy, and Y.-P. Zhao, "*The surface enhanced Raman scattering from Ag nanorod array substrate: the site dependent enhancement and layer absorbance effect*," J. Phys. Chem. C **113**, 9664 – 9669 (2009).

128. Y.-P. He and Y.-P. Zhao, "*The role of Mg2Si formation in the hydrogenation of Mg film and Mg nanoblade array on Si substrates*," Journal of Alloys and Compounds **482**, 173 – 186 (2009).

127. A. Wolcott, W. A. Smith, T. R. Kuykendall, Y.-P. Zhao, and J. Z. Zhang, "*Photoelectrochemical study of nanostructured ZnO thin films for hydrogen generation from water splitting*," Advanced Functional Materials **19**, 1 – 8 (2009).

126. Y.-P. He and Y.-P. Zhao, "*Hydrogen storage and cycling properties of Vanadium decorated Mg nanoblade array on Ti coated Si substrate*," Nanotechnology **20**, 204008 (2009).

125. J. Gibbs and Y.-P. Zhao, "*Autonomously motile catalytic nanomotors by bubble propulsion*," Appl. Phys. Lett. **94**, 163104 (2009).

124. Z.-Y. Zhang, Y.-J. Liu, Q. Zhao and Y.-P. Zhao, "*The effect of layer absorbance for complex SERS substrates*," Appl. Phys. Lett. **94**, 143107 (2009).

123. C. L. Leverette, E. Villa-Aleman, S. Jokela, Z.-Y. Zhang, Y.-J. Liu, Y.-P. Zhao, and S. A. Smith, **"***Trace detection and differentiation of Uranyl(VI) ion cast films utilizing aligned Ag nanorod SERS substrates***,"** Vibrational Spectroscopy **50**, 143 – 151 (2009).

122. W. Smith and Y.-P. Zhao, "*Superior photocatalytic performance by vertically aligned core-shell TiO_2/WO_3 nanorod arrays*," Catalysis Communications **10**, 1117 – 1121 (2009).

121. Y.-P. He and Y.-P. Zhao, "*Improved hydrogen storage properties of V decorated Mg nanoblade array*," Physical Chemistry Chemical Physics **11**, 255 – 258 (2009).

120. Y.-J. Liu, Z.-Y. Zhang, Q. Zhao, R. A. Dluhy, and Y.-P. Zhao, "*The role of the nano-spine in the nanocomb arrays for surface enhanced Raman scattering*," Appl. Phys. Lett. **94**, 033103 (2009).

119. A. Wolcott , W. A. Smith, T. R.. Kuykendall, Y.-P. Zhao, and J. Z. Zhang, **"***Photoelectrochemical water splitting using dense and aligned TiO2 nanorod arrays*," Small **5**, 104 – 111 (2009).

118. R. Sharma, J.P. Mondia, J. Schäfer, W. Smith, S.-H. Li, Y.-P. Zhao, Z.H. Lu, and L.J. Wang, "*Measuring the optical properties of a trapped ZnO tetrapod*," Microelectronics Journal **40**, 520 – 522 (2009).

117. Y.-J. Liu, Z.-Y. Zhang, Q. Zhao, and Y.-P. Zhao, **"***Revisiting the separation dependent surface enhanced Raman scattering*," Appl. Phys. Lett. **93**, 173106 (2008).

116. Y.-P. He, Y.-P. Zhao, L. Huang, H. Wang, and R. J. Composto, **"***Hydrogenation of Mg film and Mg nanoblade array on Ti coated Si substrates*," Appl. Phys. Lett. **93**, 163114 (2008).

115. J.-G. Fan and Y.-P. Zhao, "*Gold coated nanorod arrays as highly sensitive substrates for surface enhanced Raman spectroscopy*," Langmuir **24**, 14172 – 14175 (2008).

114. Y.-P. He, Y.-J. Liu, and Y.-P. Zhao, "*Formation of sub-micro MgH_2 whiskers during the hydrogenation of Ti doped Mg film*," Nanotechnology **19**, 465602 (2008).

113. S.-Y. Chu, Y.-W. Huang, and Y.-P. Zhao, "*Silver nanorod array as a SERS substrate for foodborne pathogenic bacteria detection*," Applied Spectroscopy **62**, 922 – 931 (2008).

112. W. Smith and Y.-P. Zhao, "*Enhanced photocatalytic activity by aligned WO_3/TiO_2 two-layer nanorod arrays*," J. Phys. Chem. C **112**, 19635 – 19641 (2008).

111. J.-X. Fu, A. Collins, and Y.-P. Zhao, "*The optical properties and biosensor application of ultra thin Silver films prepared by oblique angle deposition*," J. Phys. Chem. C **112**, 16784 – 16791(2008).

110. J. D. Driskell, A. G. Seto, L. P. Jones, S. Jokela, R. A. Dluhy, Y.-P. Zhao, and R. A. Tripp, "*Rapid microRNA (miRNA) detection and classification via surface-enhanced Raman spectroscopy (SERS)*," Biosensors and Bioelectronics **24**, 923 – 938 (2008).

109. J. P. Mondia, R. Sharma, J. Schäfer, W. Smith, Y. P. Zhao, Z. H. Lu, and L. J. Wang, "*An electrodynamically confined single ZnO tetrapod laser*," Appl. Phys. Lett. **93**, 121102 (2008).

108. Y.-J. Liu and Y.-P. Zhao, "*Simple model for surface-enhanced Raman scattering from tilted silver nanorod array substrates*," Phys. Rev. B **78**, 075436 (2008).

107. J. G. Gibbs and Y.-P. Zhao, "*Measurement of driving force of catalytic nanomotors in dilute hydrogen peroxide by torsion balance*," Rev. Sci. Instrum. **79**, 086108 (2008).

106. Y.-P. He, Z.-Y. Zhang, and Y.-P. Zhao, "*Optical and photocatalytic properties of oblique angle deposited TiO_2 nanorod array*," J. Vac. Sci. Technol. B **26**, 1350 – 1358 (2008).

105. R. Blackwell and Y.-P. Zhao, "*Metal nanoparticle embedded porous thin film prepared by oblique angle co-evaporation*," J. Vac. Sci. Technol. B **26**, 1344–1349 (2008).

104. Z.-Y. Zhang and Y.-P. Zhao, "*Optical properties of U-shaped Ag nanostructure*," J. Phys.: Condens. Matter **20**, 345223 (2008).

103. Z.-Y. Zhang and Y.-P. Zhao, "*Optical properties of helical and multi-ring Ag nanostructures: the effect of pitch height*," J. Appl. Phys. **104**, 013517 (2008).

102. Y.-P. Zhao, R. A. Dluhy, and R. A. Tripp, "*Novel nanorod array structures for surface enhanced Raman spectroscopy (SERS) biosensing*," Nano Today **3**, 31 – 37 (2008).

101. W.M. Hlaing Oo, M.D. McCluskey, Y.-P. He, and Y.-P. Zhao, "*Strong Fano resonance of oxygen-hydrogen bonds on oblique angle deposited Mg nanoblades*," Appl. Phys. Lett. **92**, 183112 (2008).

100. J.-X. Fu, B. Park, G. Siragusa, L. Jones, R. Tripp, Y.-P. Zhao, and Y.-J. Cho "*Au/Si hetero-nanorod-based biosensor for Salmonella detection*," Nanotechnology **19**, 155502 (2008).

99. J.-X. Fu, Y.-P. Zhao, and J.-S. Wu, "*Rotation of Cu nanorods during growth*," J. Phys. Chem. C **112**, 5459 – 5462 (2008).

98. Y.-P. He, Z.-Y. Zhang, C. Hoffmann, and Y.-P. Zhao, "*Designing Ag nanoparticles embedded MgF_2 nanorod array*," Advanced Functional Materials **18,** 1676 – 1684 (2008).

97. J.-X. Fu, Y.-P. He, and Y.-P. Zhao, "*Fabrication of heteronanorod structures by dynamic shadowing growth*," IEEE Sensors **8**, 989 – 997 (2008).

96. J. D. Driskell, S. Shanmukh, Y.-J. Liu, S. Hennigan, L. Jones, Y.-P. Zhao, R. A. Dluhy, D. C. Krause, and R. A. Tripp, "*Infectious agent detection with SERS-active silver nanorod arrays prepared by oblique angle deposition*," IEEE Sensors **8**, 863 – 870 (2008).

95. J.-G. Fan, J.-X. Fu, A. Collins, and Y.-P. Zhao, "*Freezing a water droplet on an aligned Si nanorod array substrate*," Nanotechnology **19**, 155707 (2008).

94. S. Shanmukh, L. Jones, Y.-P. Zhao, J. D. Driskell, R. A. Tripp and R. A. Dluhy, "*Identification and classification of respiratory syncytial virus (RSV) strains by surface enhanced Raman spectroscopy and multivariate statistical techniques*," Analytical and Bioanalytical Chemistry **390**, 1551 – 1555 (2008).

93. Y.-P. He, Y.-P. Zhao, and J.-S. Wu, "*The effect of Ti doping on the growth of Mg nanostructures by oblique angle co-deposition*," Appl. Phys. Lett. **92**, 063107 (2008).

92. J. Song, U. Willer, J. Szarko, A. Caughey, S. Leone, S. H. Li, Y. P. Zhao, "*Ultrafast upconversion probing of lasing dynamics in single ZnO nanowire lasers*," J. Phys. Chem. C **112**, 1679 – 1684 (2008)**.**

91. J. Driskell, S. Shanmukh, Y. Liu, S. Chaney, X.-J. Tang, Y.-P. Zhao, and R. Dluhy, "*The use of aligned silver nanorod arrays prepared by oblique angle vapor deposition*," J. Phys. Chem. C **112**, 895 – 901 (2008).

90. J.-G. Fan, and Y.-P. Zhao, "*The effect of the shape of nanorod arrays on the nanocarpet effect*," Nanotechnology **19**, 045713 (2008).

89. Y. P. He and Y.-P. Zhao, "*NIR laser induced photothermal coloration in $WO_3 \cdot H_2O$ nanoflakes*," J. Phys. Chem. C **112**, 61 – 68 (2008).

88. Z.-Y. Zhang and Y.-P. Zhao, "*Extinction spectra and electrical field enhancement of Ag nanorods with different topologic shapes*," J. Appl. Phys. **102**, 113308 (2007).

87. W. Smith, Z.-Y. Zhang, and Y.-P. Zhao, "*Structural and optical characterization of WO_3 nanorods/films prepared by oblique angle deposition*," J. Vac. Sci. Technol. B **25**, 1875 – 1881 (2007).

86. H. Y. Chu, Y.-J. Liu, Y.-W. Huang, and Y.-P. Zhao, "*A high sensitive fiber SERS probe based on silver nanorod arrays*," Optics Express **15**, 12230 – 12239 (2007).

85. Z.-Y. Zhang and Y.-P. Zhao, "*The optical properties of helical Ag nanostructures calculated by discrete dipole approximation method,*" Appl. Phys. Lett. **90**, 221501 (2007).

84. Y.-P. He, J.-S. Wu, and Y.-P. Zhao, "*Designing catalytic nanomotors by dynamic shadowing growth,*" Nano Letters **7,** 1369 – 1375 (2007).

83. J.-G. Fan and Y.-P. Zhao, "*Spreading of a water droplet on a vertically aligned Si nanorod array surface*," Appl. Phys. Lett. **90**, 013102 (2007).

82. Y.-P. He, J. Fu, Y. Zhang, Y. Zhao, L. Zhang, A. Xia, and J. Cai, "*Multilayered Si/Ni nanosprings and their magnetic properties,*" Small **3,** 153 – 160 (2007).

81. Y. Liu, J. Fan, S. Shanmukh, R. A. Dluhy, and Y.-P. Zhao, "*Angle dependent surface enhanced Raman scattering obtained from a Ag nanorod array substrate,*" Appl. Phys. Lett. **89,** 173134 (2006).

80. S. Shanmukh, L. Jones, Y.-P. Zhao, R. A. Dluhy, and R. A. Tripp, "*Rapid and sensitive detection of respiratory virus molecular signatures using surface enhanced Raman,*" Nano Letters **6,** 2630 (2006).

79. X.-J. Tang, G. -G. Zhang, and Y.-P. Zhao, "*Electrochemical characterization of Silver nanorod electrodes prepared by oblique angle deposition,*" Nanotechnology **17**, 4439 – 4444 (2006).

78. Y.-P. Zhao, S. B. Chaney, and Z.-Y. Zhang, "*Absorbance spectra of aligned Ag nanorod arrays prepared by oblique angle deposition,*" J. Appl. Phys. **100**, 063527 (2006).

77. S. B. Chaney, Z.-Y. Zhang, and Y.-P. Zhao, "*Anomalous polarized absorbance spectra of aligned Ag nanorod arrays,*" Appl. Phys. Lett. **89**, 053117 (2006).

76. C. L. Leverette, S. A. Jacobs, S. Shanmukh, S. B. Chaney, R. A. Dluhy, and Y.-P. Zhao, "*Aligned silver nanorod arrays as substrates for surface-enhanced infrared absorption spectroscopy (SEIRA)*," Appl. Spectroscopy **60**, 906 – 913 (2006).

75. Z.-Z. Wu, Y.-P. Zhao and W. S. Kisaalita, "*A packed Cytodex microbead array for three-dimensional cell-based biosensing,*" Biosensor and Bioelectronics **22**, 685 (2006).

74. Z.-Z. Wu, Y.-P. Zhao and W. S. Kisaalita, "*Interfacing SH-SY5Y human neuroblastoma cells with SU-8 microstructures,*" Colloids and Surfaces B: Biointerfaces **52**, 14 – 21 (2006).

73. J. G. Han, Z. Y. Zhu, S. Ray, A. K. Azad, W. L. Zhang, M. X. He, S. H. Li, and Y. P. Zhao, "*Optical and dielectric properties of ZnO tetrapod structures at terahertz frequencies,*" Appl. Phys. Lett. **89**, 031107 (2006).

72. Z.-Y. Zhang and Y.-P. Zhao, "*Tuning the optical absorption properties by engineering the topologic shape of Ag nanorods,*" Appl. Phys. Lett. **89**, 023110 (2006).

71. H.-H. Wang and Y.-P. Zhao, "*Nanostructure evolution of $YBa_2Cu_3O_x$ thin films grown by pulsed-laser glancing-angle deposition*," J. Vac. Sci. Technol. B **24**, 1230 (2006).

70. Y.-P. Zhao, S.-H. Li, S. B. Chaney, S. Shanmukh, J.-G. Fan, R. A. Dluhy, and W. Kisaalita, "*Designing nanostructures for sensor applications,*" J. Electric Mater. **35**, 846 – 851 (2006).

69. J.-G. Fan and Y.-P. Zhao, **"***Characterization of watermarks formed in nano-carpet effect,*" Langmuir **22**, 3662 (2006).

68. Y.-P. Zhao, S. B. Chaney, S. Shanmukh, and R. A. Dluhy, "*Polarized surface enhanced Raman and absorbance spectra of aligned Silver nanorod arrays,*" J. Phys. Chem. B **110**, 3153 (2006).

67. Y.-P. Zhao and J.-G. Fan, "*Clusters of bundled nanorods in nanocarpet effect,*" Appl. Phys. Lett., **88**, 103123 (2006).

66. J. K. Song, J. M. Szarko, S. R. Leone, S. H. Li, and Y. P. Zhao, "*Ultrafast carrier dynamics and wavelength-dependent lasing-time characteristics in single ZnO nanotetrapod and nanowire lasers,*" J. Phys. Chem. B **109**, 15749 (2005).

65. F. Haq, Y. L. Rao, C. Keith, Y.-P. Zhao, and G. Zhang. "*Nano and micro structured substrates for neuronal cell development*," Journal of Biomedical Nanotechnology **1***,* 313 (2005).

64. S. B. Chaney, S. Shanmukh, Y.-P. Zhao, and R. A. Dluhy, "*Randomly aligned silver nanorod arrays produce high sensitivity SERS substrates,*" Appl. Phys. Lett. **87**, 031908 (2005).

63. J.-G. Fan and Y.-P. Zhao, "*Direct deposition of aligned nanorod array onto cylindrical objects,*" J. Vac. Sci. Technol. B **23**, 947 (2005).

62. J. M. Szarko, J. K. Song, C. W. Blackledge, I. Swart, S. R. Leone, S.-H. Li, and Y.-P. Zhao, "*Optical injection probing of single ZnO tetrapod lasers*," Phys. Chem. Lett. **404**, 171 (2005).

61. N. R. Raravikar, L. S. Schadler, A. Vijayaraghavan, Y. P. Zhao, B. Q. Wei, and P. M. Ajayan, "*Synthesis and characterization of thickness-aligned carbon nanotube-polymer composite films,*" Chemistry of Materials **17**, 974 (2005).

60. J.-G. Fan, D. Dyer, G.-G. Zhang, and Y.-P. Zhao, "*Nano-carpet effect: pattern formation during the wetting of vertically aligned nanorod array,*" Nano Letters **4**, 2133 (2004).

59. S.-H. Li, X. -F. Zhu, and Y.-P. Zhao, "*Carbon assisted growth of SiO_x nanowires,*" J. Phys. Chem. B. **108**, 17032 (2004).

58. W. Bowie and Y.-P. Zhao, "*Monte Carlo simulation of vapor deposition polymerization*," Surf. Sci. Lett. **563**, L245 (2004).

57. J. G. Fan, X. J. Tang, and Y.-P. Zhao, "*Water contact angles of vertically aligned Si nanorod arrays*," Nanotechnology **15**, 501 (2004).

56. G. G. Zhang and Y.-P. Zhao, "*Mechanical characteristics of nano-scale springs,*" J. Appl. Phys. **95**, 267 (2004).

55. Pei-I Wang, Y.-P. Zhao, G.-C. Wang and T.-M. Lu, "*Novel growth mechanism of single crystalline Cu nanorods by electron beam irradiation,*" Nanotechnology **15**, 218 (2004).

54. T. Karabacak, J. P. Singh, Y.-P. Zhao, G.-C. Wang, T.-M. Lu, "*Scaling during shadowing growth of isolated nanocolumns*," Phys. Rev. B **68**, 125408 (2003).

53. F. Tang, D.-L. Liu, D.-X. Ye, Y.-P. Zhao, T.-M. Lu, G.-C. Wang, A. Vijayaraghavan, "*Magnetic properties of Co nanocolumns fabricated by oblique-angle deposition,*" J. Appl. Phys. **93**, 4194 (2003).

52. D.-X. Ye, Y.-P. Zhao, G.-R. Yang, Y.-G. Zhao, G.-C. Wang, and T.-M. Lu, "*Manipulating the column tilt angles of nanocolumnar films by glancing angle deposition,*" Nanotechnology **13**, 615 (2002).

51. T. Karabacak, Y.-P. Zhao, Jason T. Drotar, G.-C. Wang, and T.-M. Lu, "*Kinetic roughening in silicon nitride films growth by PECVD*," Phys. Rev. B **66**, 075329 (2002).

50. Q. M. Hudspeth, K. P. Nagle, Y.-P. Zhao, T. Karabacak, C. V. Nguyen, M. Meyyappan, G.-C. Wang, and T.-M. Lu, "*How does an MWNT AFM tip affect the determination of surface roughness statistics?*" Surf. Sci. **515**, 453 (2002).

49. Y.-C. Chen, N. R. Raravikar, Y.-P. Zhao, L. S. Schadler, P. M. Ajayan, T.-M. Lu, G.-C. Wang, and X.-C. Zhang, "*Ultrafast optical switching properties of single-wall carbon nanotube,*" Appl. Phys. Lett. **81**, 975 (2002).

48. Y.-P. Zhao, D.-X. Ye, G.-C. Wang, and T.-M. Lu, "*Sculpture aligned nano-column arrays and nano-flowers by glancing angle deposition,*" Nano Letters **2**, 351 (2002).

47. Y.-P. Zhao, D.-X. Ye, Pei-I Wang, G.-C. Wang, and T.-M. Lu, "*Fabrication Si nano-columns and square springs on self-assembly colloid substrates,*" International Journal of Nanoscience **1**, 87 (2002).

46. Y.-P. Zhao, B. Q. Wei, P. M. Ajayan, G. Ramanath, T.-M. Lu, G.-C. Wang, A. Rubio and S. Roche, "*Anomalous frequency dependent electrical transport in carbon nanotube circuits,*" Phys. Rev. B **64**, 201402(R) (2001).

45. J. T. Drotar, B. Q. Wei, Y.-P. Zhao, G. Ramanath, P. M. Ajayan, T.-M. Lu, and G.-C. Wang, "*Reflection high-energy electron diffraction from carbon nanotubes,*" Phys. Rev. B. **64**, 125417 (2001).

44. Y.-P. Zhao, J. T. Drotar, T.-M. Lu and G.-C. Wang, "*Morphology transition during low pressure chemical vapor deposition,*" Phys. Rev. Lett. **87**, 136102 (2001).

43. J. T. Drotar, Y.-P. Zhao, T.-M. Lu and G.-C. Wang, "*Surface-roughening in low-pressure chemical vapor deposition,*" Phys. Rev. B **64**, 125411 (2001).

42. T. Karabacak, Y.-P. Zhao, J. T. Drotar, G.-C. Wang, and T.-M. Lu, "*Kinetic roughening in amorphous silicon films growth by magnetron sputtering,*" Phys. Rev. B **64**, 085323 (2001).

41. H.-D. Liu, Y.-P. Zhao, G. Ramanath, S. P. Murarka, and G.-C. Wang, "*In-situ measurement of thickness dependent of electrical resistance of ultrathin Cu films on thick SiO_2/Si(100) substrate,*" Thin Solid Films **384**, 151 (2001).

40. Y.-P. Zhao, T.-M. Lu, and G.-C. Wang, Reply to Das Sarma's Comment, Phys. Rev. Lett. **86**, 2697 (2001).

39. Y.-P. Zhao, R. M. Gamache, G.-C. Wang, T.-M. Lu, G. Palasantzas, and J. Th. M. De Hosson, "*Surface roughness, magnetic domains and coercivity of a thin magnetic film,*" J. Appl. Phys. **89**, 1325 (2001).

38. M. Li, Y.-P. Zhao, and G.-C. Wang, "*In-situ measurement of thickness dependence of electrical resistance of ultrathin Co films on SiO_2/Si(111) substrate,*" J. Vac. Sci. Tech. A **18**, 2992 (2000).

37. Y.-P. Zhao, J. B. Fortin, G. Bonvallet, G.-C. Wang and T.-M. Lu, "*Kinetic roughening in vapor deposition polymerization of linear-chain polymer films,*" Phys. Rev. Lett. **85**, 3229 (2000).

36. T. Karabacak, Y.-P. Zhao, T. Liew, T.-M. Lu, and G.-C. Wang, "*Study of a hard disk surface using an in-plane light scattering technique,*" J. Appl. Phys. **88**, 3361 (2000).

35. T. Karabacak, Y.-P. Zhao, M. Stowe, B. Quayle, T.-M. Lu, and G.-C. Wang, "*Large angle in-plane light scattering from rough surfaces,*" Appl. Opt. **39**, 4658 (2000).

34. J. T. Drotar, Y.-P. Zhao, T.-M. Lu and G.-C. Wang, "*Surface roughening in shadowing growth and etching in 2+1 dimensions,*" Phys. Rev. B **62**, 2118 (2000).

33. G. Palasantzas, Y.-P. Zhao, G.-C. Wang, T.-M. Lu, J. Barnas and J. Th. M. De Hosson, "*Electrical conductivity and thin films growth dynamics,*" Phys. Rev. B **61**, 11109 (2000).

32. G. Palasantzas, Y.-P. Zhao, G.-C. Wang, and J. Th. M. De Hosson, "*Roughness effects on magnetic properties of thin films,*" Physica B **283**, 199 (2000).

31. J. T. Drotar, Y.-P. Zhao, T.-M. Lu and G.-C. Wang, "*Mechanisms for plasma and reactive ion etch-front roughening,*" Phys. Rev. B **61**, 3012 (2000).

30. Y.-P. Zhao, G.-C. Wang, T.-M. Lu, G. Palasantzas, and J. Th. M. De Hosson, "*Surface roughness effect on capacitance and leakage current of an insulating film,*" Phys. Rev. B **60**, 9157 (1999).

29. Y.-P. Zhao, J. T. Drotar, G.-C. Wang, and T.-M. Lu, "*Roughening in plasma etch fronts of Si(100),*" Phys. Rev. Lett. **82**, 4882 (1999).

28. Y.-P. Zhao, A.R. Hopper, G.-C. Wang and T.-M. Lu, "*Monte Carlo simulation of the initial growth stage in vapor deposition polymerization,*" Phys. Rev. E, **60**, 4310 (1999).

27. Y.-P. Zhao, G. Palasantzas, G.-C. Wang, and J. Th. M. De Hosson, "*Surface/interface roughness induced demagnetizing effect in thin magnetic films,*" Phys. Rev. B **60**, 1216 (1999).

26. J. T. Drotar, Y.-P. Zhao, T.-M. Lu and G.-C. Wang, "*Numerical analysis of the noisy Kuramoto-Sivashisky equation in 2+1 dimensions,*" Phys. Rev. E **59**, 177 (1999).

25. Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, "*Anisotropy in growth front roughening,*" Phys. Rev. B **58**, 13909 (1998).

24. Y.-P. Zhao, C.-F. Cheng, G.-C. Wang, and T.-M. Lu, "*Characterization of pitting corrosion in aluminum films by light scattering,*" Appl. Phys. Lett. **73**, 2432 (1998).

23. G.-R. Yang, Y.-P. Zhao, Y. Z. Hu, T. Paul Chow, and R. Guttmann, "*XPS and AFM study of chemical mechanical polishing of silicon nitride,*" Thin Solid Films **333**, 219 (1998).

22. G.-R. Yang, Y.-P. Zhao, and B.-Y. Tong, "*Studying low-pressure chemical vapor deposition a-Si:B alloys by optical spectroscopy,*" J. Vac. Sci. Technol. A **16**, 2267 (1998).

21. Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, "*Diffraction from anisotropic rough surfaces,*" Phys. Rev. B **58**, 7300 (1998).

20. Y.-P. Zhao, I. Wu, C.-F. Cheng, Ueyn Block, G.-C. Wang, and T.-M. Lu, "*Characterization of random rough surfaces by in-plane light scattering,*" J. Appl. Phys. **84**, 2571 (1998).

19. T.-M. Lu, G.-C. Wang, and Y.-P. Zhao, "*Beyond intensity oscillation,*" Surface Science Review and Letter **5**, 899 (1998).

18. Y.-P. Zhao, C.-F. Cheng, G.-C. Wang, and T.-M. Lu, "*Power law behavior in diffraction from fractal surfaces,*" Surf. Sci. Lett. **409**, L703 (1998).

17. G.-R. Yang, Y.-P. Zhao, B. Wang, E. Barnat, J. McDonald, and T.-M. Lu, "*Chemical interactions at Ta/Fluorinated polymer buried interfaces,*" Appl. Phys. Lett. **72**, 1846 (1998).

16. M. Li, Y.-P. Zhao, G.-C. Wang and H.-G. Min, "*Effect of surface roughness on magnetization reversal of Co films on plasma-etched Si(100) substrates,*" J. Appl. Phys. **83**, 6287 (1998).

15. Y.-P. Zhao, H.-N. Yang, G.-C. Wang, and T.-M. Lu, "*Diffraction from diffusion barrier induced mound structures in epitaxial growth fronts,*" Phys. Rev. B **57**, 1922 (1998).

14. Y.F. Wu, F. Yang, A.M. Xiong, Y.-P. Zhao, and L.M. Zheng, "*High-spectral-resolution reconstruction of atmospheric Rayleigh-Mie scattering from semi-blind de-convolution,*" Acta Optica Sinica **17**, 1066 (1997).

13. G.-R. Yang, Y.-P. Zhao, N. Jan, S. Murarka, and R. Guttmann, "*Chemical mechanical polishing of BCB and PA-N films,*" J. Electrochemical Society **144**, 3249 (1997).

12. G.-R. Yang, Y.-P. Zhao, N. Jan, S. Murarka, and R. Guttmann, "*Chemical mechanical polishing of Parylene-N film: an XPS and AFM study,*" J. Electronic Materials **26**, 935 (1997).

11. Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, "*Diffraction from non-Gaussian rough surfaces,*" Phys. Rev. B **55**, 13938 (1997).

10. H.-N. Yang, Y.-P. Zhao, A. Chan, G.-C. Wang, and T.-M. Lu, "*Sampling-induced hidden cycles in correlated random rough surface,*" Phys. Rev. B **56**, 4224 (1997).

9. G.-R. Yang, Y.-P. Zhao, M. Abburi, S. Dabral and B.-Y. Tong, "*Comparison of crystalline Si and B with a-Si:B alloys: An XPS Study,*" J. Vac. Sci. Technol. A **15**, 279 (1997).

8. H.-N. Yang, Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, "*Noise-induced roughening evolution of amorphous Si films grown by thermal evaporation,*" Phys. Rev. Lett. **76**, 3774 (1996).

7. Y.-P. Zhao, Y.-J. Wu, H.-N. Yang, G.-C. Wang, and T.-M. Lu, "*In situ real-time study of chemical etching process of Si(100) using light scattering,*" Appl. Phys. Lett. **69**, 221 (1996).

6. Y. P. Zhao, H.-N. Yang, G.-C. Wang, and T.-M. Lu, "*Extraction of real-space correlation function of a rough surface by light scattering using diode array detectors,*" Appl. Phys. Lett. **68**, 3063 (1996).

5. C. C. Roberts, G.-R. Yang, A. Cocoziello, Y.-P. Zhao, G. Wnek, and T.-M. Lu, "*High electro-optic side-chain polymer by vapor deposition polymerization,*" Appl. Phys. Lett. **68**, 2067 (1996).

4. Y. P. Zhao, D. L. Zhang, G. L. Kong, G. Q. Pan, and X B. Liao, "*Evidence for light-induced increase of Si-H bonds in undoped a-Si:H,*" Phys. Rev. Lett. **74**, 558 (1995).

3. G. L. Kong, D. L. Zhang, Y. P. Zhao, and X. B. Liao, "*The role of hydrogen and Si-H bonds in the metastability of a-Si:H,*" Solid State Phenomena **44 - 46**, 677 (1995).

2. Y. F. Wu, Y. P. Zhao, F. Yang, A. M. Xiong, J. X. Tang, and L. M. Zheng, "*A new method for acquiring high resolution atmospheric Rayleigh-Mie spectrum,*" Optical Engineering **34**, 1195 (1995).

1. G. L. Kong, D. L. Zhang, Y. P. Zhao, G. S. Sun, G. Q. Pan, and X. B. Liao, "*A new method for detecting subtle changes in Si-H bonds of a-Si:H,*" J. Non-Crystl. Solids **164 - 166**, 211 (1993).

CONFERENCE PAPERS

38. Yanjun Yang, Hao Li, Dan Luo, Jiaheng Cui, Amit Kumar, Les Jones, Jackelyn Murray, Hemant Naikaree, Yung-Yi C. Mosleye, Teddy Spikese, Sebastian Hülck, Xianyan Chen, Ralph A. Tripp, Bin Ai, and Yiping Zhao "*Detection of SARS-CoV-2 from real patient specimens by surface enhance Raman spectroscopy and deep learning*," Proc. SPIE 12999, DOI: 10.1117/12.3021632 (2024).

37. Zaid Farooq Pitafi, WenZhan Song, Zion Tse, Yanjun Yang, Yiping Zhao, Jackelyn Murray and Ralph Tripp, "*Intelligent surface-enhanced Raman scattering sensor system for virus identification*," 2022 IEEE Global Communications Conference, eCF Paper Id: 1570804672.

36. Yanjun Yang, Jackelyn Murray, James Haverstick, Ralph A. Tripp, and Yiping Zhao, "*Rapid and high-sensitive LSPR sensor for coronavirus detection*," Proc. SPIE 12116, DOI: 10.1117/12.2618156 (2022).

35. Yanfeng Wang, Harrison Byron Chong, Zhengjun Zhang, and Yiping Zhao, "*Design and fabrication of nanorod in nanohole arrays with highly tunable enhanced optical transmission*," Proc. SPIE 11797, DOI: 10.1117/12.2589678 (2021).

34. Yanfeng Wang, Yanjun Yang, and Yiping Zhao, "*Designing nanostructures by nanosphere monolayers and dynamic shadowing growth*," NANOscientific, No. 16, p. 13-17 (2019).

33. George Larsen, Weijie Huang, Yiping Zhao, S. E. H. Murph, "*Porous Iron oxide nanorods and their photothermal applications*," Proc. SPIE 9919, DOI: 10.1117/12.2237997 (2016).

32. Whitney Ingram, Yizhuo He, Q. J. Zhang, Keenan Stone, Dexian Ye, William Dennis, and Yiping Zhao, "*Plasmonic properties of nanopatterns fabricated by nanosphere shadowing lithography*," Proc. SPIE 9919, DOI: 10.1117/12.2235468 (2016).

31. Yizhuo He and Yiping Zhao, "*Designing large scale chiral metamaterials by nanosphere shadowing lithography*," Proc. SPIE 9929, DOI: 10.1117/12.2236351 (2016).

30. Xiaomeng Wu, Jing Chen, Yiping Zhao, and Susu M. Zughaier "*Rapid detection of Pseudomonas aeruginosa biomarkers in biological fluids using surface-enhanced Raman scattering,"* Proc. SPIE Volume 9107, DOI: 10.1117/12.2053156 (2014).

29. Jing Chen, Justin Abell, Yao-wen Huang, and Yiping Zhao "*Ultra-thin layer chromatography and surface enhanced Raman spectroscopy on silver nanorod array*

substrates prepared by oblique angle deposition," Proc. SPIE Volume 8366, DOI: 10.1117/12.918763 (2012).

28. Yiping Zhao, "*Toward practical SERS sensing*," Proc. SPIE Volume 8401, DOI: 10.1117/12.918761 (2012).

27. Chunyuan Song, Jeremy D. Driskell, Ralph A. Tripp, Yiping Cui, and Yiping Zhao, "*The use of a handheld Raman system for virus detection*," Proc. SPIE Volume 8358, DOI: 10.1117/12.918758 (2012).

26. John Gibbs and Yiping Zhao, "*Catalytic nanomotors: challenges and opportunities*," Proc. SPIE Volume 8058, DOI: 10.1117/12.887526 (2011).

25. Qun Zhao, Jason Langley, Joonsang Lee, Justin Abell, and Yiping Zhao, "*Bioimaging and biospectra analysis by means of independent component analysis: experimental results*," Proc. SPIE Volume 8058, DOI: 10.1117/12.887064 (2011).

24. Yongjun Liu and Yiping Zhao, "*Surface-enhanced Raman scattering characterization of Ag nanorod arrays fabricated by oblique angle deposition*," Proc. SPIE Volume **7757**, DOI: 10.1117/12.859924 (2010).

23. Wilson Smith and Yiping Zhao, "*Hetero-structured nano-photocatalysts fabricated by dynamic shadowing growth*," Proc. SPIE Volume **7770**, DOI: 10.1117/12.859912 (2010).

22. Junxue Fu and Yiping Zhao, "*Optical properties of silver/gold nanostructures fabricated by shadowing growth and their sensing applications*," Proc. SPIE Volume **7766**, DOI: 10.1117/12.859126 (2010).

21. J. D. Driskell, J. L. Abell, R. A. Dluhy, Y.-P. Zhao, and R. A. Tripp, "*SERS-based viral fingerprinting: current capabilities and challenges*," Proc. SPIE Volume **7703**, DOI: 10.1117/12.863616 (2010).

20. Ming Au, Scott McWhorter, Thad Adams, John Gibbs, and Yiping Zhao, "*Free standing Aluminum nanostructures for anode of Li-Ion rechargeable battery*," ECS Transactions **19** (25), 59-66 (2009).

19. J. L. Abell, J. D. Driskell, R. A. Dluhy, R. A. Tripp, and Y.-P. Zhao, "*Optimization of a multi-well array SERS chip*," Proc. SPIE Volume **7321**, 732103-11 (2009).

18. Z.-Y. Zhang and Y.-P. Zhao, "*Tuning the optical properties by engineering the topologic shape of Ag nanorods*," Proc. SPIE Vol. **7032**, 703207 (2008).

17. J.-X. Fu and Y.-P. Zhao, "*Fine tune localized surface Plasmon resonance for chemical and biological sensors*," Proc. SPIE Vol. **6959**, 695911 (2008).

16. Bosoon Park; Junxue Fu; Yiping Zhao; Gregory R. Siragusa; Yong-Jin Cho; Kurt C. Lawrence; William R. Windham, "*Bio-functional Au/Si nanorods for pathogen detection*," Proc. SPIE Vol. **6769**, DOI: 10.1117/12.736486 (2007).

15. S. Cheng, X. Luo, S. M. Bhandarkar, J. Fan, and Y. Zhao, "*Video-based metrology of water droplet spreading on nanostructured surfaces*," WACV, p. 16, Proceedings of the Eighth IEEE Workshop on the Applications of Computer Vision (WACV 2007) (2007).

14. Y.-P. Zhao, S. Shanmukh, Y.-J. Liu, S. B. Chaney, L. Jones, R. A. Dluhy, and R. A. Tripp, "*Silver nanorod arrays as high sensitive SERS substrates for viral detection,*" Proc. SPIE Vol. **6324**, 63240M (2006).

13. J.-G. Fan, Y.-J. Liu, and Y.-P. Zhao, "*Integrating aligned nanorod array onto optical fibers for SERS probes,*" Proc. SPIE Vol. **6327**, 63270R (2006).

12. F. Haq, C. Keith, Y.-P. Zhao, and G. Zhang, "*Micro and nanostructured substrates to control neurite growth in PC12h neuron cells,*" Transactions of the Society for Biomaterials **26**, 706 (2005).

11. G. Zhang, F. Haq, Y.-P. Zhao, and C. Keith, "*Neurite outgrowth in rat Pheochromocytoma on nanostructured substrates,*" Biorheology **42**, 104 (2005).

10. Y.-P. Zhao and Wade Bowie, "*Simulating vapor deposition of polymer thin films,*" Mat. Res. Soc. Symp. Proc. Vol. **859**, JJ6.4 (2004).

9. G. Zhang, Y. P. Zhao, W. Kisaalita, C. Keith, J. G. Fan, F. Haq, D. Dyer, G. Sawaya, and K. Uyesugi, "*Nanostructured terrain for supporting neurite growth*," Transactions of the Society For Biomaterials, Vol. **25**, 727 (2004).

8. J. R. LaGraff, Y.-P. Zhao, D. J. Graber, P. Rainville, G. C. Wang, T. M. Lu, Q. Chu-LaGraff, D. Szarowski, W. Shain, and J. N. Turner, "*Fabrication and imaging of protein crossover structures*," Mat. Res. Soc. Symp. Proc. **735**, 33 (2003).

7. T.-M. Lu, Y.-P. Zhao, J. T. Drotar, T. Karabacak, and G.-C. Wang, "*Novel mechanisms on the growth morphology of films*," Mat. Res. Soc. Symp. Proc. **749**, 3 (2003).

6. Y.-P. Zhao, D.-X. Ye, G.-C. Wang, and T.-M. Lu, "*Designing nanostructures by glancing angle deposition*," SPIE Proceedings Vol. **5219**, 59 (2003).

5. J. T. Drotar, Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, *"Why is KPZ type surface roughening so hard to observe?"* Mat. Res. Soc. Symp. Proc. **648**, P7.9.1 (2001)

4. T. S. Kuan, C. K. Inoki, G. S. Oehrlein, K. Rose, Y.-P. Zhao, G.-C. Wang, S. M. Rossnagel, and C. Cabral, *"Fabrication and performance limits of sub-0.1 mm Cu interconnects,"* Mat. Res. Soc. Symp. Proc. Vol. **612**, D7.1 (2000)

3. Y.-P. Zhao, G.-C. Wang, and T.-M. Lu, *"Study of surface etch-front morphology using in-plane light scattering,"* SPIE Proc. **3784**, 314 (1999)

2. G.-R. Yang, Y.-P. Zhao, N. Jan, S. Murarka, and R. Guttmann, *"Chemical mechanical polishing of polymer films: comparison between PA-N and BCB films,"* Mat. Res. Soc. Symp. Proc. Low-Dielectric Constant Materials III, edited by C. Case, P. Kohl, T. Kikkawa, and W.W. Lee, p.162 (1997).

1. G.-R. Yang, Y.-P. Zhao, and B.-Y. Tong, *"FTIR study of amorphous Silicon-Boron alloys deposited by LPCVD,"* Mat. Res. Soc. Symp. Proc. Thin Films for Photovoltaic and Related Device Applications, edited by D. Ginley, A. Catalano, H. W. Schock, C. Eberspacher, T. M. Peterson, and T. Wada, p. 83 (1996).

SEMINARS & COLLOQIUMS

153. "*Finding a Needle in a Haystack – Towards Highly Sensitive Optical Diagnostics*," Beijing Institute of Nanoenergy ad Nanosystems, Chinese Academy of Sciences, China, 06/21/24.

152. "*Finding a Needle in a Haystack – Towards Practical SERS Sensing*," Department of Physics, Capital Normal University, China, 06/19/24.

151. "*Glancing angle deposition: the art of nanostructure design and applications*," School of Health Science and Engineering, University of Shanghai for Science and Technology, China, 06/17/24.

150. "*Finding a Needle in a Haystack – Towards Practical SERS Sensing*," Institute of Advanced Materials, Nanjing University of Posts and Telecommunications, China, 05/23/23.

149. "*Finding a Needle in a Haystack – Towards Practical SERS Sensing*," College of Materials Science, Southwest University, China, 05/14/23.

148. "*Improving Ischemic Stroke Treatment with Functional Magnetic Nanomotors*," School of Physics, Xidian University, 04/26/2023.

147. "*Smartphone Based Labs for Online and Active Physics Classes*," School of Physics, Xidian University, 04/25/2023.

146. "*Scalable Fabrication of Plasmonic Metamaterials*," School of Physics, Xidian University, 04/24/2023.

145. "*Improving ischemic stroke treatment with functional magnetic nanomotors*," School of Medicine, Qatar University, 03/27/2023.

144. "*Rapid detection of SARS-CoV-2 in human nasopharyngeal swab specimens using surface enhance Raman spectroscopy and deep learning*," School of Medicine, Qatar University, 03/26/2023.

143. "*Improving ischemic stroke treatment with functional magnetic nanomotors*," Department of Chemistry, University of Georgia, 09/30/2022.

142. "*Glancing angle deposition: the art of nanostructure design and applications*," Department of Physics, University of North Georgia, 3/3/2022.

141. "*Functional magnetic nanomotors to improve ischemic stroke treatment*," Biomedical Engineering Seminar, Florida Institute of Technology, 09/17/2021.

140. "*Functional magnetic nanomotors to improve ischemic stroke treatment*," School of Physics and Electronic Engineering, Jiangsu Normal University, China, 07/03/21.

139. "*Scalable fabrication of plasmonic metamaterials*," Department of Physics, Applied Physics & Astronomy, Rensselaer Polytechnic Institute, 04/14/21.

138. "*Glancing angle deposition and its energy/biomedical applications*," College of Engineering, Westlake University, China, 12/14/20.

137. "*Glancing angle deposition and its energy/environmental applications*," Tsinghua-Berkeley Shenzhen Institute, Shenzhen, China, 6/12/20.

136. "*Making SERS sensing practical*," Department of Physics, India Institute of Technology Delhi, 2/20/20.

135. "*When glancing angle deposition meets with nanosphere lithography — scalable design of plasmonic metamaterials,*" Department of Physics, India Institute of Technology Delhi, 2/12/20.

134. "*The PhD skills– a personal view*," Department of Physics, India Institute of Technology, 1/24/20.

133. "*Functional magnetic nanomotors to improve ischemic stroke treatment*," School of Medicine, Qatar University, 01/07/20.

132. "*Towards practical SERS sensing*," School of Medicine, Qatar University, 01/06/20.

131. "*Advanced nanofabrication and applications by glancing angle deposition*," College of Materials Science, Southwest University, China, 01/03/20.

130. "*The PhD skills– a personal view*," Department of Physics and Astronomy, UGA, 10/3/19

129. "*Improving the performance of LSPR sensors*," School of Physics and Electronic Engineering, Jiangsu Normal University, China, 07/31/19.

128. "*Functional magnetic nanomotors to improve ischemic stroke treatment*," Department of Physics, Applied Physics & Astronomy, Rensselaer Polytechnic Institute, 09/19/18.

127. "*Magnetic nanomotors to improve stroke treatment*," Department of Physics & Astronomy，the University of Georgia, 08/30/18.

126. "*Advanced nanofabrication and applications by glancing angle deposition*," Suzhou Institute of Nano-Tech and Nano-Bionics, Chinese Academy of Sciences, China, 06/07/18.

125. "*Designing plasmonic structures by nanosphere shadowing lithography*," Institute of Advanced Materials, Nanjing University of Posts and Telecommunications, China, 06/05/18.

124. "*Towards practical SERS sensing*," College of Communication Engineering, Chongqing University, China, 05/28/18.

123. "*Magnetic nanomotors to improve stroke treatment*," School of Electronics Engineering & Computer Science， Peking University, China 05/24/18.

122. "*Glancing angle deposition for plasmonics*," Department of Physics & Astronomy, University of Georgia, 04/06/18.

121. "*The applications of nanotechnology for food safety*," College of Food Science& Nutritional Engineering, China Agricultural University, China, 06/26/17.

120. "*Optical chiral metamaterials*," Department of Physics and Astronomy, UGA, 08/18/16.

119. "*Functional nanomaterials fabricated by dynamic shadowing growth*," School of Physics, Sichuan University, China, 5/25/16.

118. "*Optical bio-sensors and chiral metamaterials*," Department of Physics, Southwestern Jiatong University, China, 5/24/16.

117. "*Functional nanomaterials fabricated by dynamic shadowing growth*," Hunan University, China, 5/23/16.

116. "*Optical bio-sensors and chiral metamaterials*," National University of Defense Technology, China, 5/23/16.

115. "*Optical bio-sensors and chiral metamaterials*," Department of Mechanical Engineering, University of North Carolina, 11/19/15.

114. "*Optical bio-sensors and chiral metamaterials*," Department of Physics, University of Texas Arlington, 5/7/15.

113. "*SERS sensors for food safety applications*," Jiangsu Academy of Agricultural Sciences, China, 01/26/15.

112. "*Desired skills for graduate students – a personal view*," School of Physics and Electronic Engineering, Jiangsu Normal University, China, 01/23/15.

111. "*SERS sensors for medical diagnostics, food safety, and environmental detection*," School of Physics and Electronic Engineering, Jiangsu Normal University, China, 01/22/15.

110. "*SERS sensors for food safety applications*," Beijing Entry-Exit Inspection and Quarantine Bureau, China, 1/21/15.

109. "*SERS sensors for medical diagnostics, food safety, and environmental detection*," Academy of Military Medical Sciences, China, 1/20/15.

108. "*SERS sensors for food safety applications*," College of Food Sciences, Southwestern University, China, 1/19/15.

107. "*Functional nanomaterials fabricated by dynamic shadowing growth*," Department of Physics and Astronomy, Georgia State University, 11/18/14.

106. "*Functional nanomaterials fabricated by dynamic shadowing growth*," Department of Mechanical Engineering, University of Minnesota, 10/22/14.

105. "*The applications of nanotechnology for biomedical diagnostics and disease treatment*," Department of Infectious Diseases, University of Georgia, 10/09/14.

104. "*Functional nanomaterials fabricated by dynamic shadowing growth*," School of Physics and Electronic Engineering, Jiangsu Normal University, China 06/06/14.

103. "*Functional nanomaterials fabricated by dynamic shadowing growth*," School of Physics and Electronics, Shangdong Normal University, China, 06/05/14.

102. "*Functional nanomaterials fabricated by dynamic shadowing growth*," Institute of Advanced Materials, Nanjing University of Posts and Telecommunications, China, 06/03/14.

101. "*Functional nanomaterials fabricated by dynamic shadowing growth*," School of Physics & Information Technology, Shaanxi Normal University, China, 05/22/14.

100. "*The PhD skills – a personal view*," Department of Physics & Astronomy, University of Georgia, 10/24/13.

99. "*Advanced fabrication of heteronanorods and composite nanorods by dynamic shadowing growth*," School of Chemical Engineering and Environment, Beijing Institute of Technology, 6/19/13.

98. "*Advanced fabrication of heteronanorods and composite nanorods by dynamic shadowing growth*," School of Materials Science and Engineering, Tsinghua University, China, 6/18/13.

97. "*Towards practical SERS sensing*," Department of Materials Science and Engineering, Peking University, China, 6/17/13.

96. "*Disease diagnostics and food safety monitoring by surface enhanced Raman scattering,*" School of Materials Science and Engineering, Tsinghua University, China, 6/14/13.

95. "*Towards practical SERS sensing*," College of Physics, Southwestern University, China, 6/4/13.

94. "*Advanced nanofabrication by glancing angle deposition*," Department of Physics, Beihang University, China, 5/29/13.

93. "*The PhD skills – a personal view*," UGA NanoSEC, University of Georgia, 2/1/13.

92. "*Advanced nanofabrication by glancing angle deposition*," Chemistry Division, National Institute of Standard, 4/27/12.

91. "*Towards practical SERS sensing*," Department of Biomedical Engineering, The Catholic University of America, 4/23/12.

90. "*Towards practical SERS sensing*," School of Physics & Information Technology, Shaanxi Normal University, China, 4/11/12.

89. "*Towards practical SERS sensing*," Department of Electric Engineering, Southeast University, China, 4/1/12.

88. "*Catalytic nanomotors: challenges and opportunities*," Department of Chemistry, Tsinghua University, China, 3/30/12.

87. "*Towards practical SERS sensing*," Department of Materials Science and Engineering, Tsinghua University, China, 3/29/12.

86. "*Advanced nanofabrication by glancing angle deposition*," Army Research Laboratory, Adelphi, MD 3/23/12.

85. "*Towards practical SERS sensing*," Center for Diagnostics and Therapeutics, Georgia State University, 11/21/11.

84. "*Catalytic nanomotors: challenges and opportunities*," Department of Mechanical Engineering, Clemson University, 11/11/11.

85. "*Advanced nanofabrication by glancing angle deposition*," MEMS Summer Camp, Peking University, China, 7/28/11.

83. "*Advanced nanofabrication by glancing angle deposition*," Shanghai Institute of Ceramics, Chinese Academy of Sciences, China, 9/28/10.

82. "*Advanced nanofabrication by glancing angle deposition*," Department of Chemistry, Fudan University, China, 9/28/10.

81. "*Advanced nanofabrication by glancing angle deposition*," the Institute for Advanced Materials & Nano Biomedicine, Tongji University, China, 9/27/10.

80. "*Advanced nanofabrication by glancing angle deposition*," College of Materials Science, Shanghai University, China, 9/21/10.

79. "*nano-structured materials: current and future applications*," UGA Engineering Seminar, 9/2/10.

78. "*Catalytic nanomotors: opportunities and challenges*," Department of Materials Science and Engineering, Tsinghua University, China, 6/21/10.

77. "*Catalytic nanomotors: opportunities and challenges*," Institute of Microelectronics, Peking University, China, 6/20/10.

76. "*Advanced nanofabrication by glancing angle deposition*," College of Materials Science, Beijing Institute of Technology, China, 6/18/10.

75. "*Advanced nanofabrication by glancing angle deposition*," Institute of High Energy Physics, Chinese Academy of Science, China, 6/17/10.

74. "*Catalytic nanomotors: opportunities and challenges*," Graduate School, Chinese Academy of Science, China, 6/17/10.

73. "*Surface enhanced Raman scattering from Ag nanorod array*," Department of Physics, Southwestern Jiatong University, China, 6/7/10.

72. "*Catalytic nanomotors: opportunities and challenges*," Department of Physics, Southwestern Jiatong University, China, 6/7/10.

71. "*Advanced nanofabrication by glancing angle deposition*," Department of Physics, Southwestern Jiatong University, China, 6/7/10.

70. "*Catalytic nanomotors: opportunities and challenges*," College of Physics, Southwestern University, China, 6/4/10.

69. "*Nanoscience at UGA: the next big thing*," Monroe Rotary club, 3/20/10.

68. "*Nanoscience at UGA: the next big thing*," UGA Golf Court, 3/16/10.

67. "*Advanced nanofabrication by glancing angle deposition*," UGA NanoSEC, 2/5/10.

66. "*Catalytic nanomotors: opportunities and challenges*," Georgia Tech Nanotechnology Research Center, 1/27/10.

65. "*The biological and energy applications of nanostructures fabricated by glancing angle deposition*," UGA Engineering Seminar, 9/3/09.

64. "*Catalytic nanomotors: opportunities and challenges*," UGA NanoSEC, 8/28/09.

63. "*The applications of nanostructures fabrication by dynamic shadowing growth***",** Savannah River National Lab, 6/10/09.

62. "*Surface enhanced Raman scattering from Ag Nanorods*," Department of Physics and Astronomy, University of Georgia, 9/18/08.

61. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Department of Physics, University of Texas - Arlington, 9/3/08.

60. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Jilin University, China, 6/18/08.

59. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Peking University, China, 6/17/08.

58. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Tsinghua University, China, 6/16/08.

57. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Southwestern University, China, 6/6/08.

56. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" GE Global Research Center, 3/27/08.

58. "*Nanostructures fabricated by glancing angle deposition and their novel applications,*" Department of Physics, Applied Physics and Astronomy, Rensselaer Polytechnic Institute, 3/26/08.

57. "*Designing nanostructures by glancing angle deposition,*" Department of Chemical Engineering, Lamar University, 3/18/08.

56. "*Designing nanostructures by glancing angle deposition,*" Department of Mechanical Engineering, State University of New York - Binghamton, 12/7/07.

55. "*Designing nanostructures by glancing angle deposition,*" Department of Mechanical Engineering and Department of Physics, Florida Institute of Technology, 10/26/07.

54. "*GLAD at the nano-bio interface*," Xiamen University, China, 9/27/07.

53. "*GLAD at the nano-bio interface*," Chongqing University, China, 9/2/07.

52. "*Nanotechnology for better life*," Monroe Rotary Club, 8/13/07.

51. "*Aligned Silver nanorod array as SERS substrates for viral sensing*," University of Missouri, 3/21/06.

50. "*Sculptured nanostructures and their applications in chemical/biological sensors and hydrogen storage materials,*" Savannah River National Laboratory, 3/8/06.

49. "*Nanotechnology and its applications in biology,*" Department of Plant Biology, University of Georgia, 11/14/05.

48. "*Designing nanostructures for sensor applications,*" Department of Chemistry, University of California – Santa Cruz, 9/28/05.

47. "*Designing nanostructures for sensor applications,*" Department of Electronics, Beijing University, 6/15/05.

46. *"Nano-carpet effect: the wetting of vertically aligned Si nanorod arrays,"* Graduate School, Chinese Academy of Science, 6/14/05.

45. "*Designing nanostructures for sensor applications,*" Graduate School, Chinese Academy of Science, 6/14/05.

44. "*Monte Carlo simulation of polymer thin film growth,"* Department of Physics, Zhejiang University, 6/7/05.

43. *"Nano-carpet effect: the wetting of vertically aligned Si nanorod arrays,"* Department of Physics, Zhejiang University, 6/6/05.

42. "*Designing nanostructures for sensor applications,*" Department of Physics, Zhejiang University, 6/3/05.

41. "*Nanotechnology: from fantasy to reality*," Department of Physics, Zhejiang University, 6/2/2005.

40. "*Nanotechnology: from fantasy to reality*," Athens Academy, 3/31/2005.

39. *"Behind the nanolab,"* Department of Physics and Astronomy, UGA 3/24/05.

38. "*Designing nanostructures for sensor applications,*" Army Research Laboratory, 3/21/05.

36. "*Designing nanostructures for sensor applications,*" Department of Mechanical Engineering, Georgia Institute of Technology, 3/17/2005.

35. "*Designing nanostructures for sensor applications,*" General Electric R&D Center, 1/27/2005.

34. "*Nanotechnology: from fantasy to reality*," Department of Physics and Astronomy, UGA 9/2/2004.

33. "*Fabricating novel nanostructures by glancing angle deposition*," Department of Biological and Agricultural Engineering, UGA 8/30/04.

32. "*Monte Carlo simulation of polymer thin film growth: Part II,*" The Center for Simulational Physics, University of Georgia, 6/04.

31. "*Monte Carlo simulation of polymer thin film growth: Part I,*" The Center for Simulational Physics, University of Georgia, 5/04.

30. "*Introduction to nanotechnology*," Cedar High School, Athens, GA, 05/04

29. "*Designing nanostructures by glancing angle deposition*," NanoNet, Oklahoma State University, 4/04.

28. "*Terahertz spectroscopy of novel nanostructures*," University of Hawaii Terahertz Workshop 2004, Hawaii,1/04 .

27. "*How can we bridge nano- and bio-technology at UGA?*" BHSI, UGA, 12/03.

26. "*Sculptured nanostructures by glancing angle deposition and their applications*," Department of Chemistry, Clemson University, 9/03.

25. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics, Clemson University, 3/03.

24. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics, Emory University, 10/4/02.

23. "*Sculptured Nanostructures by Glancing Angle Deposition,"* Department of Physics and Astronomy, University of Georgia, 10/2/02.

22. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* College of Physics, Sichuan University, China, 5/20/02.

21. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Materials Science and Engineering, Tsinghua University, China, 5/10/02.

20. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics, Peking University, China, 5/8/02.

19. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics and Astronomy, University of Georgia, 2/14/02.

18. "*Understanding growth/etching mechanisms from surface morphological evolution,*" Department of Physics and Astronomy, University of Iowa, 2/12/02.

17. "*From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics and Astronomy, University of Iowa, 2/11/02.

16. *"From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics, University of Southern Illinois, 2/7/02.

15. *"From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Advanced Materials Institute, University of New Orleans, 1/28/02.

14. *"From rough surfaces to nanostructures: thin film growth mechanisms and their applications in novel nanostructure fabrications,"* Department of Physics, University of Louisville, 1/14/02.

13. "*Sculptured nanostructures by glancing angle deposition and their applications,*" General Electric R&D Center, 11/01/01.

12. "*Growth mechanism and morphology of films produced by vapor deposition polymerization,*" Physics Department, University of Rochester, 9/26/01.

11. "*Understanding growth/etching mechanisms from surface morphological evolution,*" Department of Physics, State University of New York at Albany, 4/20/01.

10. "*Understanding growth/etching mechanisms from surface morphological evolution,*" Department of Physics, University of Cincinnati, 2/22/01.

9. "*Understanding growth/etching mechanisms from surface morphological evolution,*" Department of Physics and Astronomy, University of Oklahoma, 2/19/01.

8. "*Understanding growth/etching mechanisms from surface morphological evolution,*" Department of Materials Science and Engineering, Rensselaer Polytechnic Institute, 1/11/01.

7. "*Light scattering from random rough surfaces,*" Advanced Products Division, MTI Mechanical Technology Inc., 12/28/00.

6. "*Roughening mechanisms for plasma etch front and chemical vapor deposition growth fronts,*" Department of Physics, University of Toledo, 11/3/00.

5. "*Growth mechanism and morphology of films produced by vapor deposition polymerization,*" Physics Department, Rensselaer Polytechnic Institute, 9/11/00.

4. "*Roughening mechanisms for plasma etch front and chemical vapor deposition growth fronts,*" Physics Department, University of Minnesota, 6/9/00.

3. "*Diffraction from random rough surfaces,*" Material Science Seminar, Harvard University, 5/13/99.

2. "*Diffraction from random rough surfaces,*" Physics Department, Cornell University, 3/18/99.

1. "*Diffraction from random rough surfaces,*" General Electric R&D Center, 1/28/99.

CONFERENCES (Not a Complete List)

132. Yanjun Yang, Hao Li, Les Jones, Jackelyn Murray, Hemant Naikare, Yung-Yi C. Mosley, Teddy Spikes, Sebastian Hülck, Ralph A. Tripp, Bin Ai, and Yiping Zhao, "*Enhancing CoVID-19 Diagnosis: PCR-Comparable Direct Detection of Clinic Specimens Using Surface-Enhanced Raman Spectroscopy and Deep Learning Algorithms*," SERS 1, Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) SciX 2024, October 20 – 25, Raleigh, North Carolina, USA

131. Amit Kumar, Redwan Islam, Susu M. Zughaier, Xianyan Chen, Yiping Zhao, " *Precision Analysis of Bacterial Biomarkers Using Surface-Enhanced Raman Spectroscopy and Machine Learning*," Food Forensics, Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) SciX 2024, October 20 – 25, Raleigh, North Carolina, USA

130. Yiping Zhao, "*Challenges in Bacterial Biomarker Detection Using Surface Enhanced Raman Spectroscopy*", invited talk, 2024 Workshop on Diseases and Biomarkers, 10/19/2024, Xi'an, China**.**

129. Yiping Zhao, "*On the Measurements of Surface Enhanced Raman Scattering Spectrum*", 2024 ICORS_XXVII, 7/31/2024, Rome, Italy**.**

128. Yiping Zhao, "*Ultrafast Charge Dynamics in CuOx Thin Films*," invited talk, 2024 IUMRS-ICEM, 5/17/2024, Hong Kong, China.

127. Yiping Zhao, "*Detection of SARS-CoV-2 from real patient specimens by surface enhance Raman spectroscopy and deep learning*," invited talk, 2024 SPIE Photonics Europe, 4/10/2024, Strasbourg, France.

126. Yiping Zhao, "*Detection of SARS-CoV-2 from real patient specimens by surface enhance Raman spectroscopy and deep learning*", invited talk, 2023 Workshop on Diseases and Biomarkers, 10/14/2023, Xi'an, China**.**

125. Yiping Zhao, "Trace Tritium Detection via Surface Enhanced Raman Spectroscopy and Terahertz Frequency Domain Spectroscopy", 2023 BSRA Collaboration Exchange, 06/21/2023, Augusta, GA.

124. Yanfeng Wang, Dexian Ye, Fengtong Zhao, Zhengjun Zhang, and Yiping Zhao, "*Structure and optical property prediction of plasmonic metasurfaces fabricated by shadow sphere lithography*," 2023 APS March Meeting, March 5-10, 2023, Las Vegas, NV.

123. Yiping Zhao, "*Smartphone based labs for on-Line physics classes*," The 2023 APS March Meeting, March 5-10, 2023, Las Vegas, NV.

122. Yanjun Yang and Yiping Zhao, "*The discretized motion of an anisotropic magnetic particle under a non-uniform AC magnetic field*," 2023 APS March Meeting, March 5-10, 2023, Las Vegas, NV, USA.

121. Mona Asadinamin, Henning Meyer, Susanne Ullrich, and Yiping Zhao, "*Understanding the charge dynamics in CuO thin films using time-resolved spectroscopies*," invited talk, symposium of Photocatalysis & Photoelectrocatalysis: from Synthesis, Characterization, & Theoretical Studies of Advanced Materials to Clean Energy Applications, ACS Fall 2022 meeting, August 21 – 25, 2022, Chicago, USA (Hybrid)

120. Yiping Zhao, "*Scalable fabrication of three-dimensional chiral metamaterials*," planetary talk, Global Summit on Nanotechnology & Materials Science (GSNMS-2022) August 17-18, 2022, Nice, France.

119. Yanjun Yang, Jackelyn Murray, James Haverstick, Ralph A. Tripp, and Yiping Zhao, "*Rapid and high-sensitive LSPR sensor for coronavirus detection*," Proc. SPIE 12116, Chemical, Biological, Radiological, Nuclear, and Explosives (CBRNE) Sensing XXIII, 1211618 (30 May 2022), Orlando, FL.

118. Yiping Zhao, "*Large scale chiral metamaterial fabrication using glancing angle deposition*," invited talk, Symposium D-04 Chiral Micro & Nano Materials, International Conference on Frontier Materials (ICFM 2021), March 28 – April 1, 2022 (on-line)

117. Yiping Zhao, Lu Zhu, David W. Pearson, Stéphane L. Benoit, Jing Xie, Jitendra Pant, Yanjun Yang, Arnab Mondal, Hitesh Handa, Jane Y. Howe, Yen-Con Hung, Jorge E. Vidal, Robert J. Maier, "*Highly efficient antimicrobial catalysts*," invited talk, VI International Conference on Catalysis and Chemical Engineering, February 22-26, 2022, (San Francisco, CA) (hybrid).

116. Yanfeng Wang, Harrison Byron Chong, Zhengjun Zhang, and Yiping Zhao, "*Design and fabrication of nanorod in nanohole arrays with highly tunable enhanced optical transmission*," Proc. SPIE 11797, Plasmonics: Design, Materials, Fabrication, Characterization, and Applications XIX, 117971X (1 August 2021) (On-line).

115. Yanfeng Wang, Harrison Byron Chong, Inyoung Choi, Zhengjun Zhang, and Yiping Zhao "*Highly conductive nanograting-nanohole structures with tunable and dual-band spectral transparenc*y," AVS 67th International Symposium & Exhibition (October 24 - 29, 2021) (On-line).

114. H. M. Luong, T. D. Nguyen, Y. Zhao, "*The magneto-plasmonic properties of Ag-Co composite nanostructures*," invited talk, ICMCTF, April, 2021 (San Diego, CA).

113. Yiping Zhao, "*Complex plasmonic structures: fabrication and their applications*," invited talk, International Conference on Sculptured Thin Films (GLAD 2021), May 6-7, 2021 (On-line).

112. Yiping Zhao, "*Plasmonic compound nanohole arrays*," invited talk, 2021 TMS Annual Meeting, March 15 - 18, 2021 (On-line).

111. Yiping Zhao, "*Complex plasmonic structures: fabrication and their sensing applications*," Webinar on Materials Science, Engineering and Technology, 20 - 23 February 2021.

110. Yiping Zhao, "*Functional magnetic nanomotors to improve ischemic stroke treatment*," invited talk, Advanced Materials Lecture Series, Dec. 9, 2020 (On-line).

109. Yiping Zhao, "*Large scale fabrication of chiral metamaterials*," CLEO: QELS_Fundamental Science 2020, May 10 - 15, 2020 (Washington DC).

108. Steve Larson and Yiping Zhao, "*Improving the performance of LSPR sensors by composite plasmonic nanostructures*," the 2019 OSA Optical Sensors and Sensing Congress, Jun. 25-27, 2019 (San Jose, CA).

107. Yiping Zhao, "*Designing regular nanotructures by nanosphere shadowing lithography*," invited talk, 70th Southeastern Regional ACS Meeting, Oct. 31-Nov. 1, 2018 (Augusta, GA).

106. Yiping Zhao, "*When glancing angle deposition meets with colloidal lithography*," invited talk, 2018 NanoScientific Symposium US – Albany, USA-Park Systems , Sept. 18 - 20, 2018 (Albany, NY).

105. Yiping Zhao, "*Advanced nanofabrication and applications by glancing angle deposition*," planetary talk, International Conference on Sculptured Thin Films, March 30 - 31, 2018 (New Deli, India).

104. Yiping Zhao, "*Combining dynamic shadowing growth and colloidal monolayer to design plasmonic metamaterials*," invited talk, AVS 64th International Symposium and Exhibition, October 29- November 3, 2017 (Tampa, FL).

103. Yiping Zhao, "*Magnetic nanomotors to improve stroke treatment*," invited talk, International Conference on Micro/Nanomachines, August 25 - 28, 2017 (Wuhan, China).

102. Yiping Zhao, Yizhuo He, and Bin Ai, "*Designing plasmonic structures by nanosphere shadowing lithography*," invited talk, OSA Advanced Photonics 2017, July 24 - 27, 2017 (New Orleans, Louisiana).

101. Yiping Zhao, "*MicroRNA detection by surface enhanced Raman scattering,*" invited talk, 254th American Chemical Society National Meeting & Exposition, August 20 - 24, 2017 (Washington D.C).

100.S. Larson, W.J. Huang, Yiping Zhao, "*Combinatorial fabrication ofcomposite nanostructur es by oblique angle co-deposition*,"invited talk, 2017 TMS Annual Meeting & Exhibition, February 26 – March 2, 2017 (San Diego, California)

99. Weijie Huang, J. N. Hu, S. W. Huang, K. L. Jin, Y. P. Zhao, "*tPA loaded Fe_3O_4 nanorods to enhance and target stroke treatment*," AVS 63th International Symposium and Exhibition, November 6-11, 2016 (Nashville, TN).

98.S. Larson, W.J. Huang, Yiping Zhao, "*Combinatorial fabrication of $CuFe_2O_3$ composite nan ostructures by oblique angle co - deposition*," AVS 63th International Symposium and Exhibition, November 6-11, 2016 (Nashville, TN).

97. Yizhuo He and Yiping Zhao, "*Designing large scale chiral metamaterials by nanosphere shadowing lithography,*" Aug 30 -Sept. 1, 2016 SPIE Optics & Photonics Annual Meeting (San Diego, CA).

96. Whitney M. Ingram, Yizhuo He, Keenan Stone, Quiju Zhang, William M. Dennis, Dexian Ye, and Yiping Zhao, "*Plasmonic properties of nanopatterns fabricated by nanosphere shadowing lithography*," Aug 30 -Sept. 1, 2016 SPIE Optics & Photonics Annual Meeting (San Diego, CA).

95. George Larsen, Weijie Huang, Will Farr, Yiping Zhao, and Simona Murph, "*Iron oxide-based nanoparticles and their photothermal applications*," Aug 30 -Sept. 1, 2016 SPIE Optics & Photonics Annual Meeting (San Diego, CA).

94. Yiping Zhao, **"***Detecting bacteria by surface enhanced Raman spectroscopy*," invited talk, Mar. 15-19, 2015, 2015 TMS Annual Meeting & Exhibition (Orlando, FL).

93. Jing Chen, Xiaomeng Wu, Yao-wen Huang, and Yiping Zhao, "*Silver nanorod filters for rapid on-chip pre-concentration and SERS sensing of whole cells*," SPIE Defense, Security and Sensing, May 5-9, 2012 (Baltimore, Maryland).

92. Xiaomeng Wu; Jing Chen; Yiping Zhao; Susu M. Zughaier "*Rapid detection of Pseudomonas aeruginosa biomarkers in biological fluids using surface-enhanced Raman scattering,*" SPIE Defense, Security and Sensing, May 5-9, 2012 (Baltimore, Maryland).

91. Jing Chen, Justin Abell, Yao-wen Huang, and Yiping Zhao "*Ultra-thin layer chromatography and surface enhanced Raman spectroscopy on silver nanorod array substrates prepared by oblique angle deposition*," SPIE Defense, Security and Sensing, April 23-27, 2012 (Baltimore, Maryland).

90. Yiping Zhao, "*Toward practical SERS sensing*," invited talk, SPIE Defense, Security and Sensing, April 23-27, 2012 (Baltimore, Maryland).

89. Chunyuan Song, Jeremy D. Driskell, Ralph A. Tripp, Yiping Cui, and Yiping Zhao, "*The use of a handheld Raman system for virus detection*," SPIE Defense, Security and Sensing, April 23-27, 2012 (Baltimore, Maryland).

88. Yiping Zhao, "*Designing three-dimensional silver nanorod arrays for surface enhanced Raman scattering applications*," invited talk, the 2nd International Conference on Frontiers of Plasmonics, April 8-12, 2012 (Sichuan University, Chendu, China).

87. Qun Zhao, Jason Langley, Joonsang Lee, Justin Abell, and Yiping Zhao, "*Bioimaging and biospectra analysis by means of independent component analysis: experimental results*," SPIE Defense, Security and Sensing, April 25-29, 2011 (Orlando, Florida).

86. Justin Abell, J. Lee, Q. Zhao, and Y.-P. Zhao, "*New approaches to distinguish components from a mixture using surface-enhanced Raman scattering*," Nano-Devices for Defense and Security, August 29-September 1, 2011 **(**Brooklyn, New York).

85. Y.-P. He and Y.-P. Zhao, "*Heterogeneous nanorod arrays fabrication by a two-source dynamic shadowing growth system*," AVS 58th International Symposium and Exhibition, October 30-November 4, 2011 (Nashville, TN).

84. John Gibbs and Yiping Zhao, "*Catalytic nanomotor control: design techniques using dynamic shadowing growth*," AVS 58th International Symposium and Exhibition, October 30-November 4, 2011 (Nashville, TN).

83. George Larsen, R. Fitzmorris, J.Z. Zhang, and Y.-P. Zhao, "*Fabrication of Cr-doped TiO_2 nanorod arrays by oblique angle co-deposition and their photocatalytic properties*," AVS 58th International Symposium and Exhibition, October 30-November 4, 2011 (Nashville, TN).

82. Yongjun Liu and Yiping Zhao, "*The silver nanorod array SERS substrates*," invited talk, ICORS August 8-13, 2010 (Boston, MA).

81. Wilson Smith and Yiping Zhao, "*Hetero-structured nano-photocatalysts fabricated by dynamic shadowing growth*," SPIE Optics + Photonics, August 1-5, 2010 (San Diego, CA).

80. Yongjun Liu and Yiping Zhao, "*Surface-enhanced Raman scattering characterization of Ag nanorod arrays fabricated by oblique angle deposition*," SPIE Optics + Photonics, August 1-5, 2010 (San Diego, CA).

79. Junxue Fu and Yiping Zhao, "*Optical properties of silver/gold nanostructures fabricated by shadowing growth and their sensing applications*," invited talk, SPIE Optics + Photonics, August 1-5, 2010 (San Diego, CA).

78. J. Gibbs and Y.-P. Zhao, "*Designing catalytic nanomotors by dynamic shadowing growth*," invited talk, ICRA 2010 Workshop, May 7, 2010 (Anchorage, Alaska).

77. Y.-P. Zhao and Y.-P. He, "*The hydrogen storage performance of magnesium based nanostructures prepared by oblique angle deposition*," invited talk, Energy Storage Workshop in Santa Clara, April 29-30, 2010 (Santa Clara, CA).

76. Y.-P. Zhao, "*Advanced nanostructure and nanocomposite design by dynamic shadowing growth*," invited talk, ICCES10, April 18-21, 2010 (Las Vegas, NV).

75. D. Driskell, J. L. Abell, R. A. Dluhy, Y.-P. Zhao, and R. A. Tripp, "*SERS-based viral fingerprinting: current capabilities and challenges*," invited talk, SPIE Defense, Security + Sensing, April 5-9, 2010 (Orlando, FL).

74. Justin Abell, Hsiao Yun Chu, Jeremy Driskell, Ralph Tripp, Richard Dluhy, Yiping Zhao, "*SERS substrates: large scale fabrication and high throughput screening devices*," Nano DDS 2009, Sept. 28 - Oct. 2, 2009 (Fort Lauderdale, Florida).

73. Y.-P. Zhao, Justin Abell, J. D. Driskell, Y. Zhu, R. A. Tripp, and R. A. Dluhy, "*Multiwell SERS chips for high-throughput chemical and biological detection*," invited talk, Nanorods and Microparticles in Homeland Security symposium at the 238th ACS National Meeting, Aug. 16, 2009 (Washington, DC).

72. Y.-P. Zhao, "*Autonomous nanomotors: design and observation*," invited talk, Southeastern Microscopy Society Annual Meeting, May 27-29, 2009 (Athens, GA).

71. W. Smith, A. Wolcott, T.R. Kuykendall, J.-Z. Zhang, Y.-P. Zhao, "*Photoelectrochemical cells for direct hydrogen production from sunlight utilizing GLAD nanostructures*", invited talk, 2009 Electrical Power Conference, May 12~14, 2009 (Chicago, IL).

70. Y.-P. Zhao, J.-X. Fu, Vivien S. Chu, B. Park, and Y. W. Huang, **"***Novel nanotechnology based methods for foodborne pathogenic bacteria detection,***"** invited talk, Food-related Nanotechnology Symposium at the 237th ACS National Meeting, March 20-26, 2009 (Salt Lake City, Utah).

69. Y.-P. Zhao, **"***Novel nanotechnology based methods for pathogenic bacteria detection,***"** invited lecture, 58th Western Poultry Disease Conference *and* American College of Poultry Veterinarians Workshop, March 22-25, 2009 (Sacramento, CA).

68. Y.-P. Zhao, "*Advanced nanofabrication by dynamic shadowing growth*," invited lecture, 4th IEEE-NEMS, Jan. 5-8, 2009 (Shenzhen, China).

67. Y.-P. He and Y.-P. Zhao, "*Abnormal hydrogenation phenomena of Mg-based film structures on Si substrate: the formation of Mg_2Si alloy and sub-micro MgH_2 whiskers*," MRS Fall 2008 Meeting, Dec. 1-5, 2008 (Boston, 2008).

66. Wilson Smith and Y.-P. Zhao, "*Improved photocatalytic performance of multi-layered TiO_2/WO_3 nanostructures*," MRS Fall 2008 Meeting, Dec. 1-5, 2008 (Boston, 2008).

65. Richard A Dluhy, Jeremy Driskell, Yiping Zhao and Ralph Tripp, "*Nanorod array substrates for high sensitivity photonic sensing of biopathogens*," invited talk, MRS Fall 2008 Meeting, Dec. 1-5, 2008 (Boston, 2008).

64. Z.-Y. Zhang and Y.-P. Zhao, "*Tuning the optical properties by engineering the topologic shape of Ag nanorods*," SPIE Optics + Photonics, August 10 – 14, 2008 (San Diego, CA).

63. Y.-J. Liu**,** Z.-Y. Zhang, Y.-P. Zhao, "*Patterned Ag nanorod arrays as SERS substrates by template mediated oblique angle deposition*," AVS 55th International Symposium & Exhibition, October 20-24, 2008 (Boston, MA).

62. Y.-P. Zhao, "*GLAD at the nano-bio interface,*" invited talk**,** AVS 55th International Symposium & Exhibition, October 20-24, 2008 (Boston, MA).

61. Y.-P. Zhao, "*Novel nanotechnology based methods for foodborne pathogenic bacteria detection*," invited talk, 101st Alabama Veterinary Medicine Association (ALVMA) meeting, June 26-29 (Destin, Florida).

60. Y.-P. Zhao and Y.-P. He, "*Advanced nanofabrication by dynamic shadowing growth*," 2008 International Materials Research Conference, June 9-12 (Chong Qing, China).

59. Y.-P. Zhao and Y.-P. He, "*Catalytic nanomotors fabricated by dynamic shadowing growth*," invited talk, 2nd Integration & Commercialization of Micro & Nanosystems International Conference & Exhibition, June 3-5, 2008 (Clear Water Bay, Hong Kong, China).

58. R. Sharma, J. P. Mondia, J. Schaefer, W. Smith, S.-H. Li,Y.-P. Zhao Z. H. Lu, and L. J. Wang, "*Optical properties of levitated ZnO nanowires*," Workshop on Recent Advances of Low Dimensional Structures and Devices, April 7 – 9, 2008 (Nottingham, United Kingdom).

57. J.-X. Fu and Y.-P. Zhao, "*Fine tune localized surface Plasmon resonance for chemical and biological sensors*," SPIE Symposium on Defense & Security 2008, March 18 – 20, 2008 (Orlando, Florida).

56. Y.-P. He and Y.-P. Zhao, **"***Advanced nanofabrication by dynamic shadowing growth*," invited talk, International Conference on Computational and Experimental Engineering and Sciences 2008, March 17- March 22, 2008 (Honolulu, Hawaii).

55. Y.-P. Zhao, Y.-P. He, and J.-X. Fu, **"***Fabrication of hetero-structured 3D nanorod arrays by dynamic shadowing growth*," invited talk, Southeastern Section of the American Physical Society, November 8-10, 2007(Nashville, Tennessee).

54. Z.-Y. Zhang and Y.-P. Zhao, "*Optical properties of helical Ag nanostructure calculated by discrete dipole approximation method*," Southeastern Section of the American Physical Society, November 8-10, 2007 (Nashville, Tennessee).

53. J.-G. Fan and Y. P. Zhao, "*Superhydrophobic nanorod arrays*," AVS 54th International Symposium & Exhibition, October 14-19, 2007 (Seattle, Washington).

52. Y. P. He and Y. P. Zhao, "*Fabrication of 3D heterostructured nanorod/nanospring arrays by dynamic shadowing growth*," AVS 54th International Symposium & Exhibition, October 14-19, 2007 (Seattle, Wanshington).

51. Y.-P. Zhao, S. Shanmukh, J. Driskell, Y.-J. Liu, L. Jones, R. A. Dluhy, and Ralph A. Tripp, "*Silver nanorod arrays as high sensitive and reliable SERS substrates for viral detections*," invited talk, Colloquium Spectroscopicum Internationale XXXV, September 23-27 2007 (Xiamen, China).

50. Yuping He and Yiping Zhao, *"Catalytic nanomotors fabricated by dynamic shadowing growth*," Materials Today Asia, Sept. 2-5, 2007 (Beijing, China).

49. Y.-P. Zhao, "*Integrated nanoscale metal hydride-catalyst architectures for hydrogen storage*," DOE BES Hydrogen Storage Program Meeting, Aug. 16-17, 2007 (Germantown, MD).

48. J. S. Wu, J.-X. Fu, and Y.-P. Zhao, "*In situ investigation of dynamic growth of Cu-nanorod by transmission electron microscopy*," Microscopy & Microanalysis 2007 Meeting, August 5-9, 2007 (Ft. Lauderdale, Florida).

47. H.-Y Chu, Y. Liu, Y. Huang, and Y. Zhao, "*Sliver nanorod array as a SERS substrate for E. coli O157:H7 detection*," 2007 IFT Annual Meeting & Food Expo, July 28 – Aug. 1, 2007 (Chicago, IL).

46. J. Fu, B. Park, Y. Zhao, G. Siragusa, Y.-J. Cho, "*Au/Si nanorod-based biosensor for Salmonella detection,*" Biological Sensorics: Critical Technologies for Future Biosystems, June 15-17, 2007 (Minneapolis, Minnesota).

45. Y.-P. Zhao and Y.-P. He, "*Fabrication of hetero-structured 3D nanorod arrays by dynamic shadowing growth*," invited talk, 2007 Nanoelectronic Devices for Defense & Security (NANO-DDS) Conference, June 18-21, 2007 (Arlington, Virginia).

44. Y.-P. Zhao, S. Shanmukh, J. Driskell, Y.-J. Liu, L. Jones, R. A. Dluhy, and R. A. Tripp, "*High sensitive SERS viral detection with Silver nanorod arrays prepared by oblique angle deposition*," 2007 Nanoelectronic Devices for Defense & Security (NANO-DDS) Conference, June 18-21, 2007 (Arlington, Virginia).

43. S. Cheng, X. Luo, S. M. Bhandarkar, J. Fan, and Y. Zhao, "*Video-based metrology of water droplet spreading on nanostructured surfaces*," the Eighth IEEE Workshop on the Applications of Computer Vision (WACV 2007), Feb 20-21, 2007 (Austin, TX).

42. Y.-P. Zhao, "*Fabricating heterogeneous nanorods by physical vapor deposition*," 2007 NSF Electrical, Communications and Cyber Systems Grantees Workshop, April 29 – May 1, 2007 (Reno, Nevada).

41. Y. Zhao, S. Shanmukh, Y. J. Liu, L. P. Jones, R. A. Dluhy, and R. A. Tripp, "*SERS detection of viruses based on silver nanorod*," SPIE Symposium on Defense & Security 2007, April 9 – 13, 2007 (Orlando, Florida).

40. Y.-P. Zhao, S. Shanmukh, Y.-J. Liu, J.-G. Fan, S. B. Chaney, L. Jones, R. A. Dluhy, and R. A. Tripp, "*Silver nanorod array as high sensitive SERS substrates for viral detection,"* invited talk, MRS Fall Meeting (Boston, 2006).

39. Junxue Fu, Les Jones, Rene Alvarez, R. Tripp, Y.-P. Zhao, "*Detecting respiratory syncytial virus (RSV) infected cells by bio-functional Au/Si nanorods*," American Chemical Society 58th Southeast Regional Meeting, Nov.1-Nov.5, 2006 (Augusta, GA).

38. Z.-Y. Zhang and Y.-P. Zhao, "*Optical absorbance spectra of aligned Ag nanorod arrays prepared by oblique angle deposition*," American Chemical Society 58th Southeast Regional Meeting, Nov.1-Nov.5, 2006 (Augusta, GA).

37. Z.-Z. Wu, Y.-P. Zhao, W. Kisaalita, "*Differentiation of H945RB.3 human neural progenitor cells on microstructured substrates in terms VGCC function,*" UGA Fifth Annual BHSI Retreat, Sep 22, 2006.

36. Z.-Z. Wu, Y.-P. Zhao, W. Kisaalita, "*Developing microstructures for three dimensional cell-based biosensing,*" The 9th World Congress on biosensors, Sheraton Centre, Toronto, Canada, May 10-12, 2006.

35. Z.-Y. Zhang and Y.P. Zhao, "*The optical properties of Ag nanorods calculated by discrete dipole approximation*", the 3rd NanoSEC annual meeting. University of Georgia, Athens, GA. May 2006.

34. Y.-P. He, J.-X. Fu, Y. Zhang, L.-J. Zhang, A.-L. Xia, J.-W. Cai and Y.-P. Zhao, "*Multilayered Si/Ni nanosprings and their magnetic properties,*" the 3rd NanoSEC annual meeting. University of Georgia, Athens, GA. May 2006.

33. J.-G. Fan and Y.-P. Zhao, "*Spreading of water drops on vertically aligned Si nanorod arrays*," the MRS Fall meeting, Boston, MA. Nov 2006.

32. J.-G. Fan, Y.-J. Liu and Y.-P. Zhao, "*Integrating aligned nanorods arrays onto optical fibers*," the 53rd AVS international symposium and exhibition, San Francisco, CA. Nov. 2006.

31. J.-G. Fan and Y.-P. Zhao, "*Nanocarpet effect: formation and characterization of watermarks formed on aligned silicon nanorod arrays*," the 53rd AVS international symposium and exhibition, San Francisco, CA. Nov 2006.

30. J.-G. Fan and Y.-P. Zhao, "*The static and dynamic wetting of Si nanorod arrays*," the 3rd NanoSEC annual meeting. University of Georgia, Athens, GA. May 2006.

29. J.-G. Fan and Y.-P. Zhao, "*The static and dynamic wetting of Si nanorod arrays*," the APS March meeting, Baltimore, MD. Mar. 2006.

28. J.-G. Fan, Y.-J. Liu, and Y.-P. Zhao, "*Integrating aligned nanorod array onto optical fibers for SERS probes,*" SPIE Optics & Photonics Annual Meeting (San Diego, 2006).

27. Y.-P. Zhao, S. Shanmukh, S. B. Chaney, L. Jones, R. A. Dluhy, and R. A. Tripp, "*Silver nanorod array as high sensitive SERS substrates for viral detection,*" SPIE Optics & Photonics Annual Meeting (San Diego, 2006).

26. Y.-P. Zhao, Saratchandra Shanmukh, Stephen B. Chaney, Les Jones, Richard A. Dluhy, and Ralph A. Tripp, "*Aligned silver nanorod array as SERS substrates for viral sensing,*" APS March Meeting, 2006.

25. Z.-Y. Zhang and Y.-P. Zhao, "*The optical properties of Ag nanorods calculated by discrete dipole approximation*," Optics in the Southeast 2005, Atlanta, Georgia, 2005.

24. Z.-Y. Zhang and Y.P. Zhao, "*The optical properties of Ag nanorods calculated by discrete dipole approximation*," The second Annual University of Georgia Engineering Conference, Athens, Georgia, 2005.

23. Z.-Z. Wu, Y.-P. Zhao, W. Kisaalita, "*Developing microstructures for three dimensional cell growth,*" The 10th Annual Meeting of Institute of Biological Engineering, Athens, Georgia, USA. March 4-6, 2005.

22. Z.-Z. Wu, Y.-P. Zhao, W. Kisaalita, "*Integrating SH-SY5Y neuroblastoma cells with SU-8 microstructures,*" UGA NanoSEC Annual Workshop and Meeting 2005, May 26, 2005.

21. Y.-P. Zhao, "*Designing nanostructures for sensor applications,*" invited talk, 57th Southeast/61st Southwest Regional ACS Meeting, Memphis, TN, 1-4, Nov. 2005.

20. Y.-P. Zhao, "*Designing nanostructures for sensor applications,*" invited talk, International Workshop on Interface Disorder in Nanosystems, Leiden, Holland, 19-25, June, 2005.

19. Y.-P. Zhao, "*Monte Carlo simulation of polymer thin film growth,*" invited talk, 5th Stransi-Kaischew Surface Science Workshop – Pamporovo, Bulgaria, 19-25 February, 2005.

18. Y.-P. Zhao, "*Designing nanostructures for sensor applications,*" invited talk, TMS Annual meeting, Feb. 14, 2005 (San Francisco, CA).

17. J.-G. Fan and Y.-P. Zhao, "*Integrating aligned nanorod arrays onto optical fibers*," the SPIE Optics in the Southeast, Atlanta, GA. Oct. 2005.

16. Junxue Fu, Les Jones, Rene Alvarez, Ralph Tripp, and Y.-P. Zhao, "*Detecting Respiratory Syncytial Virus infected cells by bio-functional Au/Si nanorods*," the 2nd Annual University of Georgia Engineering Conference, University of Georgia, Athens, GA. Oct. 2005.

15. Junxue Fu, Les Jones, Y.-P. Zhao, and Ralph Tripp, "*A quartz crystal microbalance sensor for the detection of RSV*," the 2nd Annual University of Georgia Engineering Conference, University of Georgia, Athens, GA. Oct. 2005.

14. J.-G. Fan and Y.-P. Zhao, "*Integrating aligned nanorod arrays onto optical fibers*," the 2nd Annual University of Georgia Engineering Conference, University of Georgia, Athens, GA. Oct. 2005. 1st prize of best posters.

13. J.-G. Fan and Y.-P. Zhao, "*Characterization of watermarks formed on Si nanorod arrays*," the 2nd NanoSEC annual meeting, University of Georgia, Athens, GA. May 2005.

12. J.-G. Fan and Y.-P. Zhao, "*Nano-carpet effect*," the 1st NanoSEC annual meeting, University of Georgia, Athens, GA. May 2004.

11. Y.-P. Zhao and Wade Bowie, "*Simulating vapor deposition of polymer thin films,*" MRS Fall Meeting, Nov. 29-Dec. 3, 2004 (Boston, MA).

10. J.-G. Fan, D. Dyer, G.-G. Zhnag, and Y.-P. Zhao, "*Nano-carpet effect: the wetting of vertically aligned Si nanorod arrays*," MRS Fall Meeting, Nov. 29-Dec. 3, 2004 (Boston, MA).

9. Abul k. Azad, W.-L. Zhang, S.-H. Li, and Y.-P. Zhao, "*Transient photoconductivity of vertically aligned crystalline TiO_2 nanorod array*," MRS Fall Meeting, Nov. 29-Dec. 3, 2004 (Boston, MA).

8. Y.-P. Zhao, S.-H. Li, and X. -F. Zhu, Samuk Pimanpang, and G.-C. Wang, "*Carbon assisted SiO_x nanowire growth*," MRS Fall Meeting, Nov. 29-Dec. 3, 2004 (Boston, MA).

7. Y.-P. Zhao, "*Fabricating novel nanostructures by glancing angle deposition*," ICCE-11, Hilton-Head Island, SC, 8-13, August 2004.

6. Zhang, G; Zhao, YP; Kisaalita, W; Keith, C; Fan, JG; Haq, F; Dyer, D; Sawaya, G; Uyesugi, K; "*Nanostructured terrain for supporting neurite growth,*" the 7th World Biomaterials Congress, Sydney, Australia 17-21, May 2004.

5. Y.-P. Zhao, D.-X. Ye, G.-C. Wang, and T.-M. Lu, "*Designing nanostructures by glancing angle deposition*," SPIE 48th Annual Meeting (San Diego, 2003). (Invited)

4. Pei-I Wang, Y.-P. Zhao, G.-C. Wang and T.-M. Lu, MRS Spring meeting, 2002.

3. K. Dovidenko, R. Moore, J. Rullan, Y. Zhao, K. A. Dunn, N. L. Abramson, ""*Carbon nanotubes: chemical and structural effects of FIB-assisted Pt contacts deposition*," MRS Spring Meeting, 2002.

2. John R. LaGraff, Yi-Ping Zhao, David J. Graber, Dan Rainville, Gwo-Ching Wang, Toh-Ming Lu, Quynh Chu-LaGraff, Don Szarowski, William Shain, and James N. Turner, "*Fabrication and imaging of protein crossover structures*," Paper # C. 53587, MRS Fall Meeting, 2002.

1. T.-M. Lu, Y.-P. Zhao, J.T. Drotar, T. Karabacak, and G.-C. Wang, "*Novel mechanisms on the growth morphology of films*," Paper #W1.2, MRS Fall Meeting, 2002.

EDUCATION WEBSITES

- Two YouTube channels have been created for undergraduate education:

1. UGA Smartphone Intro Physics Lab:
https://www.youtube.com/channel/UCl09XbhyUTqP2BEX6C7nkaQ/videos

2. UGA Modern Optics: Smartphone Projects:
https://www.youtube.com/channel/UCDNH_mEXvy-Rp98ri96EuLw

- Lecture Notes:

1. Advanced Electromagnetic Theory I: https://www.zhao-nano-lab.com/advancede-em
2. GradFirst Seminar: https://www.zhao-nano-lab.com/grsc7001