

Jingfu Xu

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EDUCATION BACKGROUND

Southern University of Science and Technology	Shenzhen, China
Master Candidate of Engineering in Materials Science and Engineering	09/2022-Present
❖ GPA: 3.42/4.0	
Southern University of Science and Technology	Shenzhen, China
Bachelor of Engineering in Materials Science and Engineering	09/2018-06/2022
❖ GPA: 3.50/4.0	

RESEARCH EXPERIENCES

<i>Enhanced the thermal stability of metal nanodevices</i>	04/2023-Present
Instructed by Prof. Cheng Xing, Southern University of Science and Technology	
Objective: To study the mechanism and find potential applications after we accidently found that metal nanowires post helium ion illumination has better resistance to deformation	
❖ Fabricated metal nanodevices via helium ion exposure, e-beam evaporation deposition and helium ion illumination	
❖ Applied and optimized the rapid thermal treatment process to better distinguish as-prepared and illuminated metal nanodevices	
❖ Calculated the distribution of helium atoms inside the gold nanodevices by molecular dynamic simulation	
❖ Analyzed the mechanism of stability-enhancement via TEM, EELS and AFM characterization	
<i>Prepared a novel anti-reflective, superhydrophobic surface</i>	09/2021-04/2022
Instructed by Prof. Cheng Xing, Southern University of Science and Technology	
Objective: To verify the anti-reflective and water-repelling properties of a specific micro- and nanostructure obtained by a novel reactive ion etching process	
❖ Obtained nickel clusters by rapid thermal treatment of a nickel thin film on silicon substrate	
❖ Used the clusters as hard masks for reactive ion etching	
❖ Applied UV nanoimprint lithography and hot-embossing for pattern transfer	
❖ Characterized the micro- and nanostructures via SEM, spectrophotometer and drop shape analyzer	
<i>Prepared various functional superhydrophobic surfaces</i>	11/2020-11/2021
Instructed by Prof. Cheng Xing, Southern University of Science and Technology	
Objective: To apply superhydrophobic materials on different substrates to obtain functional superhydrophobic surfaces	
❖ Synthesized adhesion-enhanced superhydrophobic precursor solution composed of silica nanoparticles, paraffin wax and ethanol	
❖ Spray-coated the solution onto nanoimprinted polymer films and electroplated metallic molds patterned with micro walls for protection of superhydrophobic components	

PROFESSIONAL EXPERIENCES

North Carolina State University 07/2021-08/2021

Online project student in Department of Forest Biomaterials

- ❖ Investigated the fabrication and application of fossil-derived foams and bio-based foams
- ❖ Made a market comparison report of polystyrene foam and cellulose foam
- ❖ Finished a scientific poster presentation about bio-based foams

Shenzhen Institute of Advanced Electronic Materials 01/2021

Visiting Student in Thermal Management Materials Group

- ❖ Optimized the component of high thermal conductivity silicone gel for chip packaging
- ❖ Developed the glue dispensing process
- ❖ Detected defects of silicone gel in encapsulated chip via scanning acoustic microscope

Pugongying New Material Co., Ltd. 08/2019

Product Specialist Assistant

- ❖ Improved the properties of a water-proof wall-coating and designed a process to cover such coating onto porous concrete
- ❖ Made water-proof wall-coating samples for commercial exhibition

SKILLS

Language: Mandarin (native), English (proficient)

Experimental skills: Ion beam lithography, UV Photolithography, Nanoimprint lithography, Electroplating, Dry etching, Wet etching, E-beam evaporation, Sputtering, PECVD, SEM, AFM, TEM, FIB, Helium ion microscopy

Other skills: OriginLab, SRIM, Solidworks, Keyshot

PUBLICATIONS

Zhuang, X., Deng, Y., Zhang, Y., Wang, K., Chen, Y., Gao, S., **Xu, J.**, Wang, L., & Cheng, X. (2024). A strategy to fabricate nanostructures with sub-nanometer line edge roughness. *Nanotechnology*, 35(49), 495301.

Luo, W., **Xu, J.**, Li, G., Niu, G., Ng, K. W., Wang, F., & Li, M. (2022). Fabrication of robust, anti-reflective, transparent superhydrophobic coatings with a micropatterned multilayer structure. *Langmuir*, 38(23), 7129-7136.

Li, M., Luo, W., Sun, H., **Xu, J.**, Liu, Y., & Cheng, X. (2022). Superhydrophobic coatings fabricated by paraffin wax and silica nanoparticles with enhanced adhesion stability. *Materials Letters*, 309, 131316.

Li, M., Luo, W., **Xu, J.**, Zhang, J., Ng, K. W., & Cheng, X. (2022). Fabrication and oxidation of amorphous Zr-based alloy for imprint lithography. *Microelectronic Engineering*, 256, 111722.

Li, M., Luo, W., Sun, H., **Xu, J.**, Ng, K. W., & Cheng, X. (2021). Micropatterned amorphous Zr-based alloys coated with silica nanoparticles as superhydrophobic surfaces against abrasion. *ACS Applied Nano Materials*, 4(11), 12300-12307.