Bochao XIE

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EDUCATION BACKGROUND

Xi'an University of Technology 2020.09- 2024.07

- International Engineering College
- Bachelor of Science in Civil Engineering
- **Related Courses:** Semiconductor Sensors and MEMS Technology, Nano Materials and Technology, Mechanics of Materials, Civil Engineering Materials, Hydrodynamics, Structural Analysis, Hydraulic Structure, Engineering Structure Load and Reliability Design Principle, Data Science and Analysis, Big Data and Mining Technology, Artificial Intelligence and Application.

University Alliance of The Silk Road 2021.07- 2021.08

- **Summer Courses:** Frontiers in Materials Research, State of the Art Sensor and Actuator Technology, Towards a Carbon Neutrality Future by Understanding Thermal Fluid Flow in Energy and Power Engineering, UASR Innovation and Design: The Politecnico di Milano Italian Way
- **Skills: GRE 336**(V:169+Q:167+AWQ:4.0), TOEFL: 100(29,20,21,30), C, MATLAB, Jupyter

COURSERA CERTIFICATE

Georgia Institute of Technology 2022.12- Now

- **Coursera Certificate:** Material Processing, Material Behavior

Arizona State University 2022.12- Now

- **Coursera Certificate:** Materials Science for Technological Application, Materials Science for Advanced Technological Applications

PUBLICATION AND PATENT

[1] Juanjuan Wang.* , Bochao Xie', and Xueliang Duan, Effect of sintering temperature on properties of Ba (Cu1/2W12) O3 high dielectric ceramics, *Journal Of Materials Science: Materials In Electronics Ranking*
[2] Juanjuan Wang.* , Bochao Xie', Mapeng Kang, Yaning Feng, Preparation of Ba (Cu0.5W0.5) O3 based high dielectric ceramics by liquid phase method: Influence of surfactants, *Sensors and Actuators A-physical (Submitted)*
[3] Xie Bochao, The Utility Model Relates to a Portable Ultrasonic Ranging Device for Civil Engineering, *Utility Model Patent Certificate, ZL202122277056.X*
[4] Xie Bochao, Civil Engineering Construction Simulation Software V1.0, *Software Copyright Registration Certificate, Certificate No. 8859683*
[5] Xie Bochao, Civil Engineering Drawing Software V1.0, *Computer Software Copyright Registration Certificate, Certificate No. 8859684*

RESEARCH EXPERIENCE

Hemp Textiles and Composites; Wearable sensors, Actuators, and Integrated systems 2023.06- now
Supervisor: Prof. Rong Yin, Textile Engineering, Chemistry and Science, North Carolina State University

- Studing the hemp containing textiles, to make fabrics from hemp fibers, to measure hemp fiber, yarn, and fabric properties.
- Analyzing the hemp fiber reinforced composites, to make the composites and test the composite properties.
- Research on the wearable sensors, actuators, and integrated systems, to fabric the sensors/actuators, and characterize the properties.

Fabrication and performance characterization of the BaTiO3@PDA@Ag//P(VDF-TrFE) friction-based nanogenerator 2023.03- now
Supervisor: Prof. Caiyin You, School of Materials Science and Engineering, XUT

- A environmentally friendly triboelectric nanogenerator (TENG) based on bacterial cellulose (BC) membrane was prepared using a simple and effective method to enhance the dielectric constant by incorporating nanoparticles into the BC. Silver (Ag) particles were attached to the surface of barium titanate (BaTiO3) using a heating and stirring process, resulting in the formation of BTO@PDA@Ag nanoparticles. These particles were then introduced into the BC nanofiber membrane.
- At a volume fraction of 0.5% of BTO@PDA@Ag nanoparticles, the dielectric constant reached 370 at 100 Hz, with a conductivity of 0.07 and a root mean square roughness (Rq) of 587. Furthermore, the composite film with this nanoparticle loading exhibited excellent thermal stability and mechanical

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properties, with minimal mass loss below 300℃ and an elongation of 15.1%. The BC/0.5% vol BTO@PDA@Ag TENG device achieved an open-circuit voltage of 4.4 V and a short-circuit current of 8 μA at a frequency of 2 Hz.

- Characterization testing using the following equipment:
  Electrically heated forced-air drying oven, Magnetic stirrer, Vacuum filtration apparatus, X-ray diffractometer, Scanning electron microscope (SEM), Fourier-transform infrared spectroscopy (FTIR) instrument, Transmission electron microscope (TEM), Function waveform generator, Ion sputtering machine, Impedance analyzer, Digital oscilloscope, Power amplifier, Vibration table, Thermogravimetric analyzer (TGA), Universal testing machine, Electrochemical workstation.

Effect of sintering temperature on properties of Ba(Cu1/2W1/2)O3 high dielectric ceramics

Supervisor: Prof. Juanjuan Wang, School of Materials Science and Engineering,XUT 2022.01- 2023.03

- Ba(Cu1/2W1/2)O3 (BCW) ceramics were prepared by solid-phase sol-gel two-step process and their dielectric properties were investigated for energy storage applications.
- A dielectric constant of 10^5 was observed at frequency of 10 Hz and temperature of 400 ℃.
- Characterization testing using the following equipment:
  Electrically heated forced-air drying oven, Magnetic stirrer, X-ray diffractometer, Scanning electron microscope (SEM), Transmission electron microscope (TEM), Impedance analyzer, Vibration table.

Preparation of Ba(Cu0.5W0.5) O3-based high dielectric ceramics by liquid phase method: Effect of surfactant

Supervisor: Prof. Juanjuan Wang, School of Materials Science and Engineering,XUT 2022.09- 2023.03

- Investigate the influence of surfactants on the properties of Ba(Cu0.5W0.5)O3-based high dielectric ceramics prepared using the liquid phase method.
- The peg and citric acid system exhibited a high dielectric constant at 10 Hz ($>10^5$) and a low dielectric loss at 10,000 Hz (=70).
- Characterization testing using the following equipment:
  Electrically heated forced-air drying oven, Magnetic stirrer, X-ray diffractometer, Scanning electron microscope (SEM), Transmission electron microscope (TEM), Impedance analyzer, Vibration table.

INTERNSHIP EXPERIENCE

Xiamen Digital Manufacturing Engineering Research Institute 2022.07- 2022.08

- According to the scientific research project deployment of the research team, engaged in 3D printing, electrostatic spinning and other project research, and carried out scientific research and other work according to the project team's requirements.
- Assisted in reporting scientific research project management projects such as 3D printing and electrospinning

AWARDS

Xi 'an University of Technology National Engineering Star Three Star Award	2023.05
The First Xi 'an University of Technology Qingfeng Lun Dao Cup	2023.04
"Reunion Cup" second Shaanxi Province College students Gobang Network League (third prize)	2023.02
Xi 'an University of Technology Shang Zhen Duxue Advanced Individual	2022.12
Xi 'an University of Technology Shangpu Industrious Advanced Individual	2022.03
First prize in the 2nd National College Students' Career Development Competition	2021.12
2nd prize in National College Students' Scientific Quality Knowledge Competition	2021.12
Excellence Award in Third National College Innovation English Competition	2021.12
first prize in College students National Defense Science and Technology Knowledge Competition	2021.12
First prize in College Students Public Health Science Popularization Competition	2021.12
Excellence Award in National College Students AIDS Prevention Knowledge Competition	2021.12
Third prize in 2021 College Students Fire Response Skills Competition	2021.12