




# Xuan Dong



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## ACADEMIC QUALIFICATIONS

**Northwestern Polytechnical University, China** *09/2021-Present*

M.S. Flexible Electronics | GPA: 3.77/4 (Top 5%)

Exam-exempted postgraduate | Supervisor: Prof. Xuewen Wang

**Agency for Science, Technology and Research, Singapore** *09/2022-10/2023*

Institute of Materials Research and Engineering | Supervisor: Prof. Xian Jun Loh

China Scholarship Council (CSC) Joint Master's Degree Program

**Xi'an University of Technology, China** *09/2017-07/2021*

B.S. Printing Engineering | GPA: 4.51/5 (Rank: 1/123)

## RESEARCH EXPERIENCE

### Flexible Polyimide Field-effect Transistors Based on 2D/1D Semiconductor Materials

- Synthesized tellurium (Te) nanoribbons by Chemical Vapor Deposition (CVD)
- Raman, XPS, AFM, SEM, TEM, etc. for characterizations of Te nanoribbons
- Fabrication of tellurium nanoribbons-based field-effect transistors by Electron beam lithography (EBL) or Photolithography
- Investigated the photoelectric properties of field-effect transistors, such as carrier mobility and optical effect characteristics at room and low temperature

### 2D/1D Semiconductor Materials with Piezoelectric/Ferroelectric Properties

- Measurement of piezoelectric/ferroelectric response of materials by piezoelectric force microscopy (PFM), second harmonic (SHG).
- Development of improved nanoscale sensors, transducers, and storage devices using piezoelectric and ferroelectric properties

### Design and Regulation Method of Large Area Flexible Polyimide Substrate

- Synthesized polyamide-acid solution (PAA) by poly-condensation
- Prepared polyimide films by programmed heat treatment
- AFM, SEM, XRD, mechanical characterizations of polyimide films

### Photosensitive Flexible Polyimide Shadow Masks Based on Photolithography

- Preparation of photosensitive polyimide film shadow masks by photolithography
- Various characterization and improvement of the flexible shadow masks
- Preparation of curved electrodes using shadow masks and other applications

## RESEARCH ACHIEVEMENTS

### Journals:

- [1] **Xuan Dong**, Xuewen Wang, et al. Implementation of High-Performance, Free-standing Flexible Film Masks through Photosensitive Polyimide for Arbitrary Surface Micropatterns Creation. (2023, Reviewed by *Small*)
- [2] **Xuan Dong**, Xuewen Wang, et al. Exploring Photosensitive Polyimides in Flexible Electronics Review. (2023, Under Review by *ChemComm*)
- [3] Ruoqing Zhao, **Xuan Dong**, et al. Enhancing the Toughness of Free-Standing Polyimide Films for Advanced Electronics Applications: A Study on the Impact of Film-Forming Processes. *Polymers*, 2023, 15(9): 2073. (SCI | Published)
- [4] **Xuan Dong**, Xuewen Wang, et al. Tellurium Nanoribbon-Based Polyimide Substrates for Flexible Ambipolar Field-Effect Transistors. (In preparation)
- [5] **Xuan Dong**, Xuewen Wang, et al. Flexible nanogenerators based on single tellurium nanoribbon (in preparation)
- [6] Leiluo, **Xuan Dong**, et al. Ultra-low Power Consumption Flexible Sensing Electronics by Dendritic Bilayer MoS<sub>2</sub>. (2023, Under Review by *Advanced Materials*)

### Patents:

- [1] Xuewen Wang, **Xuan Dong**, et al. "A film shadow mask prepared by photolithography and its application", China Invention Patent, Application Number 202211069751. X
- [2] Xuewen Wang, **Xuan Dong**, et al. "An ultra-thin polyimide film thickness measurement method", China Invention Patent, Application Number 202211065917.0

## PROJECT PRACTICE

- [1] Xuewen Wang (PI), **Xuan Dong**, et al., Design and control method of large area flexible substrate. National Key Research & Development Program (2020YFB2008501)
- [2] Manzhang Xu (PI), **Xuan Dong**, et al., The Natural Science Foundation of Shaanxi Province (2022JQ-659)

## PERSONAL SKILLS

**Languages:** English (CET6 / IELTS), Mandarin (native)

**Characterization Techniques:** Proficiency in operation and data processing of Transmission electron microscopy (TEM), Scanning electron microscope (SEM), Atomic force microscope (AFM), Raman, and X-ray photoelectron spectroscopy (XPS).

**Equipment Operations:** Proficiency in Laser direct writing, Mask aligner, Magnetron sputtering, Electron-beam evaporation, Thermal evaporation, Atomic layer deposition (ALD), Oxygen plasma treatment, Ultrasonic cleaning machine, Ultrasonic cell crusher, Vacuum drying oven, Spin coater,

Optical microscope.

**Computer Software:** Proficiency in Origin, Microsoft Office, Photoshop, Illustrator, Indesign, AutoCAD, 3d Max, Endnotes.

## MAIN AWARDS

### National level

- “The Challenge Cup”, First Prize in the National Finals 2023
- CSC National Public Scholarship for Study Abroad 2022
- China National Scholarship 2020
- First Prize in Mathematics Competition of Chinese College Students 2019

### Provincial level

- Shaanxi Province Excellent Graduates 2021
- First Prize in the Shaanxi Advanced Mathematics Competition 2020

### Social level

- Jetta Company Limited First-Class Academic Scholarship 2019
- Dongfeng Printing Company Second-Class Academic Scholarship 2018

### School level

- Second-class scholarship, Northwestern Polytechnical University 2022
- First-class scholarship, Northwestern Polytechnical University 2021

## REFEREES

### [1] Prof. Wei Huang

Academician of Chinese Academy of Sciences

Institute of Flexible Electronics, Northwestern Polytechnical University

Research webpage: <http://teacher.nwpu.edu.cn/en/huangwei>

### [2] Prof. Xian Jun Loh

PhD, FRSC, FIMMM, FIET, FSNIC

Institute of Materials Research and Engineering (IMRE), Singapore

Research webpage: <https://www.a-star.edu.sg/imre/home>

### [3] Prof. Xuewen Wang

Deputy Dean of Frontiers Science Center for Flexible Electronics

Vice President, Flexible Electronics Research Institute

Institute of Flexible Electronics, Northwestern Polytechnical University

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