

Yuan Yao

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Education

•Jilin University, China

2021.9-now

Bachelor of Engineering, School of mechanical and aerospace engineering

Overall score: 90.62/100, rank within top 5%

•Tohoku University, Japan

2023.10-2024.8

Exchange student, Department of Robotics

8/9 Course grades: A/ AA

Research experiences

•Exploration of Film Separation Technique by Internal Laser Damage

2023.10-2024.8

Advised by Prof. Shuji Tanaka and Prof. Andrea Vergara

MEMS lab, Tohoku University

- ◇ A two-dimensional laser **stealth dicing** method for **low-stress separation of silicon-based thin films** is innovatively implemented, verifying its feasibility in the **transfer of flexible piezoelectric devices**. The output was presented at MNC2024 and expanded to the conference special issue (expected).
- ◇ **Experienced in cleanroom workflows** and equipment operation, including: Mask design/fabrication, Photolithography, DRIE, PVD/CVD, Dicing, Laser systems, and Optical/SEM/Infrared microscopy. [More](#)

•Ultrasonic vibration-assisted scratch testing platform: design and study

2022.9-2024.4

Advised by Prof. Hu Huang

Huang lab, Jilin University

- ◇ Design and verify the thread-V groove composite structure to ensure effective vibration transmission; match the system's resonance frequency with the ultrasonic transducer working frequency through Abaqus **modal simulation**. Fills the gap for **instruments that can perform scratch testing under ultrasonic vibration**.
- ◇ National Undergraduate Training Program for Innovation and Entrepreneurship(NCSEITP), **National Excellent Conclusion**. Derived 1 utility model patent and 1 journal paper. [More](#)

Academic achievement

- A paper under review for the conference extended special issue: **Yao, Y.**, Vergara, A., Tang, Z. & Tanaka, S. Feasibility study of layer separation using 2D patterned internal laser damage in silicon. *Japanese Journal of Applied Physics* [Manuscript](#)
- **Oral presentation** on the 37th International Microprocesses and Nanotechnology Conference (MNC 2024), Kyoto: The Japan Society of Applied Physics, Nov. 2024, 15D-2-3. [Slide](#) [Abstract](#)
- Journal paper published: Huang, Y.; Wu, H.; **Yao, Y.**; Zhao, H.; Huang, H. An Ultrasonic Vibration Scratch Tester for Studying the Scratch Characteristics of Materials under Ultrasonic Vibration Contact Status. *Actuators* 2024, 13, 262. <https://doi.org/10.3390/act13070262>
- Utility Model Patent published: H. Huang, **Y. Yao**, Y. Huang, and H. Wu, "An ultrasonic vibration device for vibration-assisted scratch testing," Chinese Patent CN 220649966U, Mar. 22, 2024. [Patent](#)

Skills

- **Languages:** Native Mandarin; Fluent English including IELTS: 7.0 (6.5), CET4: 622, CET6: 559, GRE: 320; Basic Japanese
- **Professional Software:** Proficient:Solidworks, Autocad; Intermediate: Catia; Ansys, Abaqus, Recurdyn; Matlab Simulink, Origin
- **Basic Programming Skills:** Python, Matlab, C#, L^AT_EX

Awards and Honors

- **National second prize-** *National University Students' Advanced Drawing Technology and Product Information Modeling Innovation Competition*
 - ◇ Advanced Engineering drawing; Proficient in CAD software; Teaching of the competition [More](#) 2022.8
- **Provincial first prize -** *China College Students Engineering Practice and Innovation Competition*
 - ◇ Led the design and manufacture of a new energy mini-vehicle [More](#) 2023.11
- **Exchange student scholarship** - *Japan Student Services Organization* 2023.10-2024.8
- **First-class scholarship; Excellent student** - *Jilin University* 2023.11/ 2022.11
- **Excellent student leader** - *School of Mechanical and Aerospace Engineering, Jilin University* 2022.11