# Zoe (Yan Ge)

yangezoe@qq.com | +8619832199036 | https://github.com/YanGe-zoe


## EDUCATION

**University of Chinese Academy of Sciences(UCAS)( Ranked 46th by CWUR); 2022 – 2025**

- Grade: 89.3， GPA=3.7/4
- Modules: Microfluidics ; viscosity ; optical imaging ; hydraulic transmission ; image processing
- Coursework: The Theory and Methods of Finite Element (97), Modern Manufacturing (90)

**Shijiazhuang Tiedao University; 2018 – 2022**

- Bachelor's Degree in Mechanical Design, Manufacturing, and Automation
- Overall GPA: 3.63/4 (Top 1.8%)

## HONORS

- Outstanding Student Award 2025
- National Scholarship (Master) 2024
  For the first 0.2% graduate students in China
- Outstanding Student Award 2024
- Outstanding Student Award 2023
- CIOMP Institute-Level Named Scholarship 2022
- Freshman Scholarship 2022
- Honor graduate 2022
- National First Prize in the China Undergraduate Mathematical Contest in Modeling (CUMCM) 2020

## PUBLICATIONS

- **Ge Y,** Huang X, Tang X, Wang Y, Chen F, Xiao D, Liang P, Li B. Application and development of optical-based viscosity measurement technology. **Optics and Lasers in Engineering**. 2024 Oct 1;181:108413.
- **Ge Y**, Huang X, Zhang B, Song Z, Tang X, Shao S, Guo L, Liang P, Li B. Measurement of fluid viscosity based on pressure-driven flow digital-printed microfluidics. **Analyst**. 2025;150(7):1326-37.
- Tang X, Wu Q, Shang L, Liu K, **Ge Y**, Liang P, Li B. Raman cell sorting for single-cell research. **Frontiers in Bioengineering and Biotechnology**. 2024 May 20;12:1389143.
- Huang X, Hu J, **Ge Y**, Guo L, Han K, Zhang J. Automatic optimization system for heat source layout of multi-chip components based on multi-software integration. **Applied Sciences**. 2024 May 27;14(11):4577.
- Wang Y, Qu Y, Wang H, Xue Y, Liang P, **Ge Y**, Peng H, Wang Y, Song Z, Bao X, Xu J. Microwell-assembled aluminum substrates for enhanced single-cell analysis: A novel approach for cancer cell profiling by Raman spectroscopy. **Talanta**. 2025 Feb 1;283:127149.

## CONFERENCES ATTENDED

Light conference week 2023 ,Saturday,August 12,Conference Center,1st floor,Nanhu Hotel (2023)
The 10th China Microfluidics High-End Academic Forum and the 3rd International Microfluidics Industry Forum (2023)
Light conference 2024 (2024)
The 11th China Microfluidics High-End Academic Forum and the 4th International Microfluidics Industry Forum (2024)

## RESEARCH EXPERIENCES

**National Natural Science Foundation of China Project: "Research on High-Throughput Raman Single-Cell Sorting Technology Based on Line-Focused Light and Droplet Microfluidics " (2023-Now)**

- Aims: Using droplet microfluidics as a carrier, a highly efficient and stable Raman flow cytometry platform is established by optimizing the coupling between the droplet microfluidic system and the line-shaped laser beam, achieving a single-cell live detection accuracy of $\geqslant$ 90% and a sorting throughput of $\geqslant$ 200 cells/h.
- Methods: Methods: This study explores the adaptability and sensitivity differences of different optical detection methods (e.g., Raman spectroscopy, fluorescence imaging, light scattering) in microscale environments, thereby constructing a high-throughput, high-sensitivity microfluidic optical detection platform.

**Jilin Provincial Science and Technology Development Program Project "Development of a Gravity-Driven Optical Tweezer Microfluidic Single-Cell Sorting Instrument" (2023–2025)**

- Aims: Develop a microfluidic single-cell sorting platform that integrates gravity-driven mechanisms with optical manipulation technology (optical tweezers) to enable high-throughput, non-destructive, and precise manipulation and sorting of single cells.
- Methods: By controlling the heights of the oil and water phases and switching the three-way valve, the system can easily achieve the generation of a single droplet at a specific moment, as well as the controlled generation of microdroplets at relatively low speeds.

**Research on the design of the precision viscosity measurement system for biologics based on a microfluidic system**
*Master's thesis supervised by Professor Bei Li* (UCAS). Ji Lin ,China

To address the issues of low accuracy and large sample consumption in traditional biopharmaceutical viscosity measurement techniques, this thesis proposes a novel microfluidic viscosity detection system that enables high-precision, low-sample-consumption, and cost-effective viscosity measurement.
The main innovative work and achievements of this thesis are as follows:

1. A variable cross-section microfluidic chip design was proposed. Using photocuring 3D printing technology, a layered fabrication method for the microfluidic chip was developed, overcoming the limitations of traditional constant cross-section designs that rely on microscopic equipment and suffer from low measurement accuracy.
2. A high-throughput viscosity measurement system based on the microfluidic chip was designed. By connecting multiple gas channels to a chip holder, parallel multi-channel measurements were realized, significantly improving detection efficiency.

**Measurement of fluid viscosity based on pressure-driven flow digital-printed microfluidics**
First author , accepted
In this study, a variable cross-section microfluidic chip structure was designed and successfully manufactured by photocuring 3D printing technology. A digital-printed (DP) microfluidic viscometer was realized by a pressure-driven flow combined with optical imaging.

**Application and development of optical-based viscosity measurement technology**
First author , accepted

Viscosity, as a crucial property of liquids, plays a vital role in various fields, including food, chemical, pharmaceutical, personal care, and biomedicine. Therefore, it is of great significance to develop methods that can accurately measure the viscosity of liquids in various environments. To this end, researchers have developed a variety of viscosity measurement techniques. In view of the complexity of viscosity measurement, viscosity measurement in many cases depends on optical technology. Optical-based viscosity measurement technology has demonstrated excellent performance at both macro and micro levels because of its suitability for low sample volumes and the advantages of non-contact measurement. Besides, it can be easily combined with other technologies and is suitable for a wide range of application scenarios.

## LEADERSHIP EXPERIENCES

**Head of Class** Sep. 2022 – June. 2025
- Managed daily class operations and organized extracurricular and academic activities Jilin, China
- Oversaw class affairs and led the planning of student events and initiatives

**Chairman of Engineering Training Center for University Students** Mar. 2020 – Mar. 2021
Vice President Shijiazhuang, China

**University Students' Science and Technology Innovation Association** Sep. 2020 – June. 2021
Vice President Shijiazhuang, China

- Assisted in leading a team of over 100 students to organize and participate in various school competitions, while supporting instruction in mathematical modeling, machinery manufacturing, machine learning, and related topics.
- Responsible for assisting in courses such as mathematical modeling and engineering application.

## SKILLS AND INTERESTS

**Software Skills:** Knowledge in Python, MATLAB, Solidworks, Comsol
**Languages:** Chinese (native), English (conversational)
**Volunteering:** Member of the Science Popularization Association
**Interests:** Self-directed learning through reading