

# Runyu Qi

**Email:** runyuq2@illinois.edu

**Phone:** +1 (217) 979-3412

**Website:** <http://me.sam7.xyz>

## EDUCATION

**University of Illinois Urbana-Champaign**      *Illinois, United States*      *Aug.2023 - Present*  
• M.S. in Material Science and Engineering

**Tsinghua University**      *Beijing, China*      *Sept.2019 - Jun.2023*  
• B.E. in Material Science and Engineering

## RESEARCH EXPERIENCES

### **Surface-Enhanced Raman Spectroscopy and Electrochemical Detection of Energetic Materials**

**Advisor: Prof. Yunhan Ling(Tsinghua Univ.)**      *Bachelor Thesis*      *Feb.2023 - Jun.2023*

- Developed sensors with SERS and electrochemical detection performance by preparing nanogold SERS substrates, modifying their surfaces, and characterizing their performance.
- Achieved quantitative detection of methylene blue and perchlorate with low minimum quantification limits.
- Developed a TNT molecularly imprinted polymer electrode and achieved detection with low minimum detection limits.

### **Nano ZrO<sub>2</sub> Reinforced Dental PMMA-Based Resin for Stereolithography Additive Manufacturing**

**Advisor: Dr. Tao Lin(Tsinghua Univ.)**      *Enterprise Project*      *Oct.2022 - Dec.2022*

- Conducted experiments to modify the surface of nano ZrO<sub>2</sub> and resin compounds, with the goal of developing a biocompatible resin with high strength and modulus.
- Formulated a high-precision resin for restorative dental models, utilized a DLP 3D printer to fabricate human teeth models, and analyzed the reinforcing mechanism via SEM.

### **A Review on PDMS-based Electronic Skin and Self-healing Property**

**Advisor: Prof. Lilian Hsiao(NC State)**      *Virtual Research Program*      *Jul.2022 - Aug.2022*

- Conducted a thorough literature review on PDMS and e-skins by analyzing 10+ research papers, then synthesized the findings into an academic poster. Collaborated with a professor and Ph.D. candidate to incorporate feedback, and delivered a successful video presentation.
- Developed skills in conducting comprehensive English literature reviews, creating academic posters, and delivering presentations. Achieved a top grade in the final evaluations for a project involving PDMS and e-skins.

### **Finite Element Method (FEM) Simulation of Autoclave and Development of Scripts & Extensions**

### ***Independent Research***

*Competition Program Apr.2022 - Jun.2022*

- Conducted a two-month project involving industry research, software training, and modeling, calculation, and simulation.
- Developed Python automation scripts and graphical extensions to streamline the modeling process, resulting in time and cost savings.
- Presented the project with video examples and won second prize in a competition.

### **3D Printing of Glass Fiber Reinforced Plastic by Stereolithography**

***Advisor: Dr. Rongxuan Liu(Tsinghua Univ.) Student Research Training Sept.2021 - Jan.2022***

- Conducted research on methods for enhancing 3D-printed workpiece strength with continuous fiber composites, through reading articles and investigating business solutions.
- Reproduced experiments using various materials and devices, and improved methods and process parameters based on the results. Analyzed the tensile break mechanisms using section SEM.
- Conducted over 20 controlled trials, achieving a two-fold increase in tensile strength without sacrificing quality. Manufactured workpieces using a desktop LCD 3D printer.

### **Development of Metallic Glass Full-spectrum Visible-light Filter**

***Advisor: Prof. Na Chen(Tsinghua Univ.) Student Research Training Dec.2020 - Sept.2021***

- Acquired expertise in magnetron sputtering to deposit amorphous alloy films onto silicon/silicon oxide and titanium alloy surfaces.
- Fabricated high hardness and high-transmittance metallic glass films, modifying their optical properties by manipulating oxygen.
- Developed an effective adhesion method, which was applied to product surfaces to create films with high hardness, wear resistance, and color.

### **PVDF based piezoelectric composites**

***Advisor: Prof. Yang Shen(Tsinghua Univ.) Research Assistant Nov.2020 - Sept.2021***

- Provided assistance to a Ph.D. candidate by preparing solutions and PVDF precursor, preparing foam ceramic bodies, and cleaning experimental instruments.
- Attended group meetings to gain familiarity with research methods and processes, and to stay informed about the latest developments in the field.

### **AWARDS**

---

<b>The Tsinghua Univ. Technological Innovation Scholarship</b>	<b>2022</b>
<b>The second prize, 3<sup>rd</sup> Virtual Simulation Creative Design Competition</b>	<b>2022</b>
<b>The first prize, 5<sup>th</sup> Tsinghua Univ. 3D Printing Skills Competition</b>	<b>2021</b>
<b>The Tsinghua Univ. Excellent Art Scholarship</b>	<b>2021</b>
<b>The second prize, 4<sup>th</sup> Tsinghua Univ. 3D Printing Skills Competition</b>	<b>2020</b>

### **ACTIVITIES**

---

**Captain, Student Network Service Work-study Team, Tsinghua Univ. Mar.2021 - Jun.2023**

- Coordinated a team of student workers responsible for IT services center support for faculty, staff, and students.
- Managed official accounts and team websites to ensure effective communication and timely updates.
- Provided technical assistance with PC issues and contributed to network operation and maintenance of campus buildings.

**President, Future Sci-tech interests Club, Tsinghua Univ.**

*Sept.2022 - Jun.2023*

- Managed GPU servers and organized activities for the club, fostering a community of technology enthusiasts.
- Facilitated communication with industry professionals, including HR representatives from companies, to provide club members with opportunities to network and learn about careers in science and technology.
- Led a program to develop a low-power, portable network monitoring device using Python, which visualized signals and monitored connection status.

**Volunteer, Olympic and Paralympic Winter Games, Beijing**

*Feb. 2022 - Mar. 2022*

- Served as an Event Services volunteer at the Beijing National Stadium (Bird's Nest) during the Games' opening and closing ceremonies.
- Provided guidance to spectators on the stands and conducted ticket checks in the corridor, ensuring a safe and enjoyable experience for all attendees.