

Shicheng Zhou

Ph.D. Candidate, School of Engineering, The University of Tokyo

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Highly motivated Ph.D. candidate with expertise in biomedical engineering, materials science, and electronics packaging. Experience specializing in wearable biosensors, biodegradable metal implants, wafer bonding, and advanced semiconductors technology. Self-motivated and adaptable, with a strong work ethic and the ability to excel in a fast-paced environment.

EDUCATION

The University of Tokyo, Japan	<i>CSC Scholarship</i>	10/2021 – 09/2024 (expected)
Doctor of Philosophy	<i>Graduate School of Engineering</i>	<i>Major: Bioengineering</i>
Sichuan University, China		11/2021 – 03/2021
Visiting Ph.D. Student	<i>Center of Biomass Materials and Nanointerfaces (BMI Center)</i>	
Harbin Institute of Technology, China	GPA: 89.0/100	09/2019 – 07/2021
Master of Engineering	<i>Stated key laboratory of Advanced Welding and Joining (AWJ)</i>	
Harbin Institute of Technology, China	GPA: 88.0/100	09/2015 – 06/2019
Bachelor of Engineering	<i>Major: Electronics Packaging Technology</i>	

SELECTED ACADEMIC PROJECTS

The University of Tokyo, Department of Bioengineering, Ph.D. Student 11/2021 – Present
Supervisor: Prof. Madoka Takai

Bio Chem-Lab. on Body (Highlighted in [Nikkei News](#), [UTokyo News](#), [Honda](#), [Toppan](#), [Sanyo-Chemical](#))

— Collaborated with Honda Motor Co., Toppan Printing Co., Ltd., and Sanyo Chemical Industries, Ltd.

- Developing wearable biosensors for continuous monitoring of biomarkers in interstitial fluid

Harbin Institute of Technology, AWJ, Graduate Research Assistant 09/2019 – 07/2021

Supervisor: Prof. Chenxi Wang

Development of Multifunctional High-Performance Biodegradable Zn Cardiovascular Stent

- Developed deposition method of PDA coatings on Zn with ultra-high speeds
- Investigated the biocompatibility and *in vitro* corrosion behavior of Zn/PDA structure.

Investigation on Silk Fibroin Direct Coated Biodegradable Mg alloys for Orthopedic Implants

- Developed direct coating method and proposed the surface activation mechanism on Mg alloys
- Studied the corrosion behavior and evaluated the *in vivo* biocompatibility of coated Mg alloy

Harbin Institute of Technology, AWJ, Undergraduate Research Assistant 09/2018 – 07/2021

Supervisor: Prof. Chenxi Wang

Multi-step Surface Activated Low-temperature Hybrid Bonding for 3D Packaging

— Collaborated with HiSilicon Semiconductor, Huawei Co., Ltd.

- Conducted surface characterization, bonding method design, and strength measurement
- Carried out data processing and analysis; Reported project progress in the monthly meeting

Investigation on Plasma Activated Wafer Direct Bonding

- Developed room-temperature direct bonding method as well as bonding pairs recycled method
- Studied the reliability of bonding pairs and proposed the silicon-based bonding mechanism

WORKING EXPERIENCE

Xiamen Xiangyu Group (XMXYG) Research Intern Shanghai Research Institute 03/2022 – 06/2022

- Conducted market research and national policy study of metal supply chain and EV battery industry
- Participated in the company's global investment and M&A projects of the mining industry

BioMap AIT Intern AIT Department 01/2022 – 03/2022

- Literature research on bioinformatics and established tens of antigen database (CD40, CD47, PD-1, etc.)
- Responsible for training new interns and the antibody labelling work docking of external companies

BioMap CTO Intern CTO Department 09/2021 – 12/2021

- Analyzed 1000+ patents/papers, processed 2000+ antibody information, and established talent databases
- Responsible for information extraction and established contacts with famous scholars of bioinformatics

Continental Automotive Co. Ltd. SMT Engineer Intern CTO Department 09/2018 – 10/2018

- Responsible for SMT (Surface Mount Technology) equipment process programming
- Carry out SMT process optimization and quality feedback of automotive GPS products PCB boards

SUMMARY OF SKILLS

- **Experiment:** Clean Room, Nanoimprinting, Etching, Polymer Synthesis
- **Characterization:** FIB, TEM, AFM, XRD, XPS, EIS, FT-IR, Raman Spectroscopy
- **Software:** Cinema 4D, Photoshop, Illustrator, AutoCAD, Microsoft Office
- **Language:** Chinese (Native), English (TOEFL: 96/120, GRE: 325/340), Japanese (N2)

PROFESSIONAL QUALIFICATIONS

- IEEE Student Member Institute of Electrical and Electronics Engineers (IEEE) 2020 – Present
- Certified IPC Specialist IPC Association Connecting Electronics Industries 2018 – 2020

HONORS

- CSC Scholarship, China Scholarship Council, 2021
- Outstanding Master Thesis of Harbin Institute of Technology, 2021
- Outstanding Graduate of Harbin Institute of Technology, 2021
- China National Scholarship, 2020
- Outstanding Student of Harbin Institute of Technology, 2020
- Rank 2nd in comprehensive assessment in school of MSE (2/301) (No. 1 in the department), 2020
- First-class Graduate Academic Scholarship, 2020
- First-class Graduate Academic Scholarship, 2019
- Outstanding Graduate of Harbin Institute of Technology, 2019
- Second Prize in 'Internet Plus' Innovation and Entrepreneurship Competition, 2018
- First Prize in the College Student Innovation and Entrepreneurship Training, 2018
- Silver Prize in 'Zuguang Cup' Innovation and Entrepreneurship Competition, 2018
- Outstanding Student of Harbin Institute of Technology, 2017
- People's scholarship, 2017
- Second Prize in the 'Astronautics Cup' Volleyball Match, 2017
- Second Prize in The Chinese Mathematics Competitions, 2016
- Merit Student of Harbin Institute of Technology, 2016
- People's scholarship, 2016

HOBBIES

- Marathon: Finished the half marathon within 1:55 in The 30th Dalian International Marathon.
- Volleyball: Captain of volleyball team of school of MSE (2017-2019).

- [1] **Zhou S.**, Wang C., Fang H., Li D., Du Y., & Qi X. (2022) Communication—Hollow MnO_x@Nanoparticles Electrospun Fibers with High Porosity for Formaldehyde Removal at Room Temperature. *Journal of the Electrochemical Society*. 169, 027518. (IF=4.316)
- [2] Qi X.#, **Zhou S.**#, Fang H., Yang S., Hang C., Tian Y., & Wang C. (2022). One-step PDA Coating Strategy on Pure Zn for Blood-contacting Engineering. *Journal of Materials Science & Technology*. 123, 78-91. (IF=8.067)
- [3] Fang H., **Zhou S.**, Qi X., Tian Y., & Wang C. (2022). Hybrid Plasma Activation Strategy for the Protein-Coated Magnesium Implants in Orthopedic Applications. *Advanced Materials Interfaces*. (Online) (IF=6.147)
- [4] Fang H., **Zhou S.**, Qi X., Tian Y., & Wang C. (2021). A Multifunctional Osteogenic System of Ultrasonically Spray Deposited Bone-active Coatings on Plasma-activated Magnesium. *Journal of Magnesium and Alloys*. (Online) (IF=10.088)
- [5] He X., Zhu H., Shang J., Li M., Zhang Y., **Zhou S.**, ... & Guo, J. (2022). Intratumoral Synthesis of Transformable Metal-phenolic Nanoaggregates with Enhanced Tumor Penetration and Retention for Photothermal Immunotherapy. *Theranostics*, 12(14), 6258-6272. (IF=11.56)
- [6] Fang H., Qi X., **Zhou S.**, Yang S., Hang C., ... & Wang C. (2022). High-Efficient VUV/O₃ Assist-Deposited Polydopamine for Poly (lactic-co-glycolic acid) Coated Pure Zn towards Biodegradable Cardiovascular Stent Applications. *ACS Applied Materials & Interfaces*. 14, 2, 3536-3550. (Cover Article) (IF=9.229)
- [7] Kang Q., Wang C., **Zhou S.**, Li G., Lu T., Tian Y., & He P. (2021). Low-Temperature Co-hydroxylated Cu/SiO₂ Hybrid Bonding Strategy for a Memory-Centric Chip Architecture. *ACS Applied Materials & Interfaces*. 13, 32, 38866-38876. (Cover Article) (IF=9.229)
- [8] Fang H., Wang C., Li D., **Zhou S.**, & Du Y. (2021). Fabrication of Ag@Ag₂O-MnO_x Composite Nanowires for High-efficient Room-temperature Removal of Formaldehyde. *Journal of Materials Science & Technology*. 91, 5-16. (IF=8.067)
- [9] **Zhou S.**, Qi X., Fang H., & Wang C. (2020). Investigation of Plasma Activation Directions for Low-damage Direct Bonding. *ECS Journal of Solid State Science and Technology*. 9, 081004. (IF=2.142)
- [10] Fang H., Wang C., **Zhou S.**, Li G., Tian Y., & Suga T. (2020). Exploration of the Enhanced Performance for Silk Fibroin/sodium Alginate Composite Coatings on Biodegradable Mg-Zn-Ca Alloy. *Journal of Magnesium and Alloys*. 1-9. (IF=7.115)
- [11] Kang Q., Wang C., Niu F., **Zhou S.**, Xu J., & Tian Y. (2020). Single-crystalline SiC Integrated onto Si-based Substrates via Plasma-activated Direct Bonding. *Ceramics International*. 46(14), 22718-22726. (IF=3.83)
- [12] Fang H., Wang C., **Zhou S.**, Kang Q., Wang T., Yang D., ... & Suga T. (2020). Rapid Pressureless and Low-temperature Bonding of Large-area Power Chips by Sintering Two-step Activated Ag Paste. *Journal of Materials Science: Materials in Electronics*, 31, 6497–6505. (IF=2.22)
- [13] Wang C., Fang H., **Zhou S.**, Qi X., Niu F., ... & Suga T. (2020). Recycled Low-temperature Direct Bonding of Si/glass and glass/glass Chips for Detachable Micro/nanofluidic Devices. *Journal of Materials Science & Technology*. 46, 156-167. (IF=8.067)
- [14] Fang H., Wang C., **Zhou S.**, Zheng Z., Lu T., Li G., ... & Suga T. (2020). Enhanced Adhesion and Anticorrosion of Silk Fibroin Coated Biodegradable Mg-Zn-Ca Alloy via a Two-step Plasma Activation. *Corrosion Science*, 108466. (IF=6.479)
- [15] Fang H., Wang C., Wang T., Wang H., **Zhou S.**, Huang Y., & Tian Y. (2019). Pressureless Low-temperature Sintering of Plasma Activated Ag Nanoparticles for High-power Device Packaging. *Materials Letters*, 256, 126620. (IF=3.204)
- [16] Huang B., Wang C., Fang H., **Zhou S.**, & Suga T. (2019). Moiré-Based Alignment Using Centrosymmetric Grating Marks for High-Precision Wafer Bonding. *Micromachines*, 10(5), 339. (IF=2.523)
- [17] Xu J.#, Wang C.#, **Zhou S.**, Zhang R., & Tian Y. (2019). Low-temperature Direct Bonding of Si and Quartz Glass Using the APTES Modification. *Ceramics International*, 45(13), 16670-16675. (IF=3.83)

CONFERENCE PAPERS

- [1] **Zhou S.**, Chino Y. Kasama T., Miyake R., Sato T., Mitsuzawa S., & Takai M. (2023, June). Development of Hollow Typed Microneedles Patch with Continuous Glucose Monitoring Sensor Based on Polylactic Acid. In 2023 The

- 22nd International Conference on Solid-State Sensors, Actuators and Microsystems (Transducer 2023). IEEE.
- [2] **Zhou S.**, Sato T., Mitsuzawa S., Chino Y. & Takai M. (2022, December). High-performance Redox Zwitterionic Hydrogel Platform towards Continuous Electrochemical Monitoring of Interstitial Fluid. In 2022 NIPS Research Conference, National Institute for Physiological Sciences, Nagoya, Japan.
 - [3] **Zhou S.**, Qi X., Kang Q., & Wang C. (2020, November). Low-temperature Direct and Indirect Bonding Using Plasma Activation for 3D Integration. In 2020 3rd IEEE International Conference on Integrated Circuits (ICTA) (pp. 132-134). IEEE.
 - [4] Qi X., Yan Han., **Zhou S.**, Kang Q., & Wang C. (2021, November). Moiré-Based Nanoprecision Bonding Alignment System for Hybrid Integration. In 2021 4th IEEE International Conference on Integrated Circuits (ICTA). IEEE.
 - [5] Kang Q., Wang C., **Zhou S.**, Lu T., & Tian Y. (2020, August). Low-temperature Bonding and Interfacial Failure Behavior of Si/glass and glass/glass chips. In 2020 21st International Conference on Electronic Packaging Technology (ICEPT). IEEE.
 - [6] Wang C., **Zhou S.**, Wang T., Fang H., & Tian Y. (2019, October). Plasma Activated Low-temperature Pressure-less Sintering of Silver Nanoparticle Paste. In 2019 23rd Chinese National Conference on Welding. CMES. (*In Chinese*)
 - [7] Kang Q., Wang C., **Zhou S.**, Xu J., An R., & Tian Y. (2019, August). Fabrication of SiC-on-insulator substrate via a low-temperature plasma activated bonding process. In 2019 20th International Conference on Electronic Packaging Technology (ICEPT) (pp. 1-4). IEEE.
 - [8] Xu J., Wang C., Kang Q., **Zhou S.**, & Tian Y. (2019, May). Direct Heterogeneous Bonding of SiC to Si, SiO₂, and Glass for High-Performance Power Electronics and Bio-MEMS. In 2019 IEEE 69th Electronic Components and Technology Conference (ECTC) (pp. 1266-1271). IEEE.
 - [9] Xu J., Wang C., Qi X., Wu B., **Zhou S.**, & Tian Y. (2018, August). VUV/O₃ Activated Bonder for Low-temperature Direct Bonding of Si-based Materials. In 2018 19th International Conference on Electronic Packaging Technology (ICEPT) (pp. 1448-1452). IEEE.

ACADEMIC ACTIVITIES

- [1] **Zhou S.**, Sato T., & Takai M. (2022, December). High-performance Electrochemical Electrode for Continuous Glucose Sensing in Interstitial Fluid. In The University of Tokyo & Tsinghua University Workshop on Health Biotechnology and Engineering.

PATENTS

- [1] Wang C., **Zhou S.**, Fang H., Qi X., et al., A Method of Preparing the Polydopamine (PDA) on Biodegradable Metals, CN112387563B. [Chinese Patent] (*Authorized*)
- [2] Wang C., Wang T., Fang H., **Zhou S.**, et al. A Method of Pressure-less Sintering of Ag Paste, CN110047765A. [Chinese Patent] (*Authorized*)
- [3] Wang C., Fang H., **Zhou S.**, et al., A Method of Preparing the Nano-hydroxyapatite—Silk fibroin Compositing Coatings on Metals, CN112263716A. [Chinese Patent] (*Current state: pending*)
- [4] Wang C., Kang Q., **Zhou S.**, Lu T., et al. A Method for Low-temperature Hybrid Bonding Based on Multi-step surface activation, CN111243972A. [Chinese Patent] (*Current state: pending*)
- [5] Wang C., Li D., **Zhou S.**, et al. A Method of Low-temperature Preparation of ZnO Nanowires Based on Electrospun, CN109371503A. [Chinese Patent] (*Current state: pending*)
- [6] Wang C., Xu J., Fang H., **Zhou S.**, et al. A Method of Direct Bonding of LiNbO₃ and Silicon Wafer by Two-step Activation of VUV and Then N₂ Plasma, CN109166793A. [Chinese Patent] (*Current state: pending*)
- [7] Wang C., Xu J., Liu Y., Tian Y., Feng Z., **Zhou S.**, et al. A Device to Clean and Activate the Surface of Materials through VUV, CN107068598A. [Chinese Patent] (*Current state: pending*)