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東京大学
THE UNIVERSITY OF TOKYO



哈尔滨工业大学
HARBIN INSTITUTE OF TECHNOLOGY

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>
Harbin Institute of Technology, China	GPA: 89.0/100 (Rank: 9/301)	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>School of MSE</i>	<i>Major: Electronics Packaging</i>

SELECTED ACADEMIC PROJECTS

Sichuan University, BMI Center, Visiting Ph.D. Student 11/2021 – 02/2022

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

Prof. Chenxi Wang, Supervisor

Accelerated Deposition of Poly-dopamine (PDA) Coatings on Biodegradable Zn alloys

- 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 Biodegradable Mg alloys Surface Direct Coating

- 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

Prof. Chenxi Wang, Supervisor

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 silicon-based bonding mechanism

JOURNAL PUBLICATIONS (#: equally contributing authors)

- [1] **Zhou S.**, Wang C., Fang H., & Li D.. Electrospun Nanoparticles-loading Hollow MnO_x Fibers with High Porosity for Formaldehyde Removal at Room Temperature. *Journal of the Electrochemical Society*. (Submitted)
- [2] Qi X.#, **Zhou S.#**, Fang H., Yang S., Hang C., Tian Y., & Wang C. One-step PDA Coating Strategy on Pure Zn for Blood-contacting Engineering. *Journal of Materials Science & Technology*. (Accepted)
- [3] Fang H., Qi X., **Zhou S.**, Yang S., Hang C., Tian Y., & Wang C. 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*. (Online)
- [4] 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*. (Online) (IF=9.229)
- [5] 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=6.155)

- [6] **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)
- [7] 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)
- [8] 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)
- [9] 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)
- [10] 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=6.155)
- [11] 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)
- [12] 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)
- [13] 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)
- [14] 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.**, 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.
- [2] 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.
- [3] 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.
- [4] 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)
- [5] 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.
- [6] 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.
- [7] 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.

PATENTS

- [1] Wang C., **Zhou S.**, Fang H., Qi X., et al., A Method of Preparing the Polydopamine (PDA) on Biodegradable Metals, CN112387563A. [Chinese Patent] (Current state: pending)

- [2] Wang C., Fang H., **Zhou S.**, et al., A Method of Preparing the Nano-hydroxyapatite—Silk fibroin Composited Coatings on Metals, CN112263716A. [Chinese Patent] (*Current state: pending*)
- [3] Wang C., Kang Q., **Zhou S.**, Lu T., et al. A Method for Low-temperature Hybrid Bonding Based on Multi-step surface activation, 202010113428.2. [Chinese Patent] (*Current state: pending*)
- [4] Wang C., Fang H., Li D., Huang B., **Zhou S.**, et al. A Method of Preparing the Ag₂O Doped MnO₂ Nanowire Network Based on Electrospun and Its Application in Catalytic Decomposition of Formaldehyde, CN 110433804A. [Chinese Patent] (*Current state: pending*)
- [5] Wang C., Wang T., Fang H., **Zhou S.**, et al. A Method of Pressure-less Sintering of Ag Paste, CN 110047765A. [Chinese Patent] (*Authorized*)
- [6] Wang C., Li D., **Zhou S.**, et al. A Method of Low-temperature Preparation of ZnO Nanowires Based on Electrospun, CN 109371503A. [Chinese Patent] (*Current state: pending*)
- [7] 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, CN 109166793A. [Chinese Patent] (*Current state: pending*)
- [8] 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, CN 107068598A. [Chinese Patent] (*Current state: pending*)

SUMMARY OF SKILLS

- **Characterizations:** SEM, FIB, TEM, AFM, XRD, XPS, EIS, FT-IR, Raman Spectroscopy, TG-DSC
- **Software:** Cinema 4D, Photoshop, Illustrator, AutoCAD, Microsoft office
- **Language:** Chinese (Native), English (TOEFL: 96/120, GRE: 325/340), Japanese (Basic)

PROFESSIONAL QUALIFICATIONS

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

HONORS

- 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).