Li Liu PhD/Associate Professor

School of Materials Science and Engineering
Wuhan University of Technology, Wuhan, Hubei, 430070, China
telephone: ++0086 18827423835, email: l.liu@whut.edu.cn,
http://smse.whut.edu.cn/yjspy/xsdw/fjs/202105/t20210521_494029.htm
https://www.researchgate.net/profile/Li-Liu-83

PERSONAL PROFILE

An intelligent, focused and enthusiastic individual who is passionate in academics. This candidate also has extensive teaching, supervision, research experiences, including PI on projects, funding applications, experimental activities, data collection, critical analysis/evaluation and concluding. More than 60 peer reviewed journal papers and 3 national invention patents have been published.

ACADEMIC PROFILE

Research has centered on the development of die attachments in power electronics for over 10 years, through multidisciplinary approaches in chemistry, engineering, mechanics and simulations. This candidate seeks an opportunity to collaborate this research in the related fields in your institute.

EDUCATION

10/2012 – 10/2016 PhD, UK Outstanding Scholarship, Electronics Manufacture
Loughborough University, UK (Supervisor: Prof. Changqing Liu)

06/2012 – 09/2012 BEng, Distinction, Materials Science and Engineering (Electronics Package)
Huazhong University of Science and Technology, China

EMPLOYMENT HISTORY

10/2020 - Present Associate Professor of Electronics Manufacture, School of Materials Science and Engineering, Wuhan University of Technology, China

10/2016 - 09/2020 Assistant Professor of Electronics Manufacture, School of Materials Science and Engineering, Wuhan University of Technology, China

01/2014 – 12/2014 Research Associate, Wolfson School of Mechanical Electrical and Manufacture Engineering, Loughborough University, UK

12/2011 – 05/2012 Visiting Research Student (Outstanding Student Exchange Project, HUST), School of Materials Science and Engineering, Loughborough University, UK

SELECTED RESEARCH FUNDINGS

01/01/2021 – 31/12/2023:
Research on a low temperature and low pressure bonding technology with high strength for die attachments in power electronic devices, National Natural Science Foundation of China (NSFC) Ref: 6200030144, ¥300000, PI.

01/01/2024 – 31/12/2025:
Large-area die attach technology for high power IGBT chips, Wuhan Knowledge Innovation Special Dawning Program, ¥100000, PI. (Grant approved, waiting for grant reference)

01/01/2023 – 31/12/2024:
Low temperature bonding mechanism of Cu@Ag solder preform through electrometric compression, Open Funding of State Key Laboratory of Advanced Welding and Joining, Ref: AWJ-23M09, ¥50000, PI.

01/01/2019 – 31/12/2020:
The interfacial reaction behaviors and crystallization mechanism between Ni-W-P amorphous metallization and Zn-Al solder for power electronics. Hubei Provincial Natural Science

Foundation of China, Ref: P2018CFB212, ¥50000, PI.

01/01/2018 – 31/12/2019:

Preparations and behaviours of Ni-W-P ternary diffusion barriers. Open Funding of State Key Laboratory of Materials Processing and Die & Mould Technology, Ref: P2018-018, ¥50000, PI.

TEACHING

Aligned with my research in the areas of electronic packaging materials and manufacturing processes, a number of diverse components/elements embedded in a variety of teaching and learning activities enable an ideal opportunity to elaborate various knowledge and experience and pass them onto younger generations. Through these courses, some achievements have been obtained, including hosting 1 university education research project, 3 times university teaching competition awards, 3 education research papers (EI index).

Introduction to Materials (Module code: 4070016110)
Micro-joining Principle and Methods (Module code: 4070640170)
Microelectronic Manufacturing Technology (Module code: 4070658170).
Materials and Structure Design of Modern Micro Electronic Packaging (Module code: 00112032)

SELECTED PUBLICATIONS

To date in total over 60 peer-reviewed outputs typically published in *Journal of Materials Processing Technology, Materials Science and Engineering A, Intermetallics, Ceramics International, Materials Characterization, Journal of Alloys and Compounds* and *etc.* Authorized 3 national invention patents.

- **Liu L.**, Huang W., Chen Z*. Effects of temperatures on microstructure evolution and deformation behavior of Fe-32Ni by *in-situ* EBSD. *Materials Science and Engineering*: A. 2023, 875, 6: 145097.
- **Liu L.,** Shi R., Zhang S., Liu W., Huang S., Chen Z*. Effects of Ag shell on electrical, thermal and mechanical properties of Cu@Ag composite solder preforms by electromagnetic compaction for power electronics. *Materials Characterization*. 2023, 197: 112702.
- Chen Z., Yang F., Liu S., Hu X., Liu C., Zhou Z., Wang Z., Robertson S., **Liu L.*** Creep behavior of intermetallic compounds at elevated temperatures and its effect on fatigue life evaluation of Cu pillar bumps. *Intermetallics*. 2022, 144: 107526.
- **Liu L.**, Shi L., Peng J., Jiang B., Liu S., Liu C., Chen Z*. Interfacial reaction between Sn-Ag solder and Electroless Ni-Fe-P diffusion barriers with different internal microstructure. *Materials Research Bulletin*. 2022, 152: 111854.
- Chen Z., Xu G., Cao Q., Ruan M., Liu S., Pan H., **Liu L.*** Deformation measurement in Al thin films at elevated temperatures by digital image correlation with speckles prepared by femtosecond laser. *Optics & Laser Technology*. 2022, 155: 108339.
- Tuo C., Yao Z., Liu W., Liu S., **Liu L.**,* Chen Z.,* Huang S., Cao X. Fabrication and characteristics of Cu@Ag composite solder preform by electromagnetic compaction for power electronics. *Journal of Materials Processing Technology*. 2021, 292: 117056.
- Liu X., **Liu L.,*** Sun R., Li J*. Low temperature sintering of MOD assisted Ag paste for die-attach application. *Materials Letters*. 2021, 305: 130799.
- Jiang B., Zhang Q., Shi L., Zhu C., Chen Z., **Liu L.,*** Shi Y. Microstructure Evolution and Shear Property of Cu-In Transient Liquid Phase Sintering Joints. *Frontiers in Materials*. 2021, 8: 658464. (Invitation)

Full publication list is available upon request, or available on Researchgate.

COMMITTEE MEMBER

International Conference on Electronic Packaging Technology (ICEPT), China
– 'Advanced Manufacturing' Committee (2023)