

IMTEK belongs to the world's biggest and leading academic research centers on microsystems engineering. The chair of application development conducts research on micro-fluidic systems and printing technologies, amongst others the so-called StarJet technology. This technology allows for the direct printing of molten tin and aluminum alloys as free flying micro droplets. Based on this technology, a printing system for 3D prototyping and for microelectronic applications for research was developed and is successfully utilized in the lab: This equipment enables experimental investigation of applications ranging from industrial production to 3D prototyping of metal microstructures. We are looking for:

Scientific Researcher / Research associate (m/f/d)

In the field of advancement of metal printing, vertical interconnecting, and multi-material additive manufacturing

By integrating multiple (3D) **printing technologies**, including **Fused Filament Fabrication (FFF)**, **high-precision inkjet printing**, **molten metal deposition (StarJet technology)**, and **in-line direct soldering of electronic components**, the multi-material additive manufacturing enables **customized, high-performance electronic structures** with improved efficiency and sustainability. Our research group developed a Multi-Material additive manufacturing platform that improves the affordability and accessibility of electronics manufacturing for small and medium-sized companies, for example, for rapid prototyping and small series production. **Resource-efficient additive manufacturing** eliminates the need for chemicals, solvents, water and wastewater in PCB production. The sustainable solution also opens up geometric design freedom. Complex and customized shapes and designs are attractive for various components, such as glucose test strips, solar cells, electronic prostheses, smart wearables and batteries....



Your responsibilities:

- **Advancement of the StarJet printing technology:** Optimizing direct printing of metal melts
- **Multi-material additive manufacturing:** Process development for combining the StarJet metal printing and 3D polymer dielectric printing
- **Innovative interconnect technology:** Process development for the fabrication of vertical interconnections on PCBs and 3D printed polymer structures
- **Direct printed solder joints:** Process development of selective soldering of electronic components using direct molten metal deposition (StarJet technology)
- **Advanced prototyping and system development:** Development and construction of custom hybrid multi-material additive manufacturing platforms, printheads, and control systems
- **Characterization of printed electronics:** Electrical and structural analysis of printed electronic components and interconnects, including signal integrity measurements and material characterization.
- **Scientific Dissemination:** Preparation of scientific publications and scientific presentations

Your profile:

- Scientific degree (M. Sc. or PhD degree) in the field of engineering science with focus on electrical engineering, microsystems engineering, printing techniques, or process technology, or related field
- Profound CAD knowledge, basic knowledge of manufacturing processes of electronics as well as experience in process development for 3D-printing or microfabrication will be an advantage.
- Hands-on experience with electronic board design, assembly, and testing will be an advantage.
- Interest in international, interdisciplinary collaboration and good communication skills in English and/or German language

- You are proactive, creative, and well-organized, and you enjoy taking responsibility and working hands-on in the lab.

We offer:

- A young, creative team and environment with the freedom to realize your own ideas. Modern laboratories with state-of-the-art equipment
- Research and development close to applications with an innovative technology
- Temporary contract limited until September 2027 with the option for later extension

Please send your detailed application containing CV, motivation letter, and certificates to the e-mail address below:

Dr. Zhe Shu

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