Karlsruhe Institute of Technology

Institute for Automation and Applied Informatics (IAI)

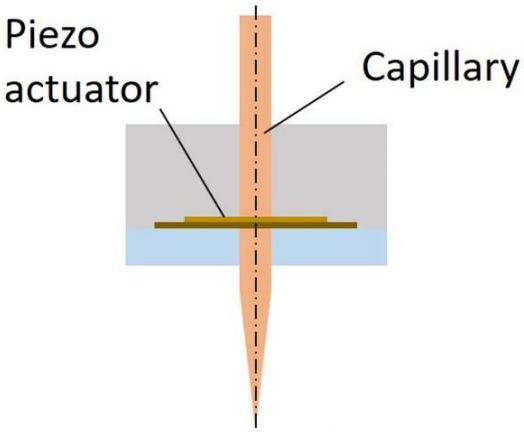
Earliest Start: Now!

Bachelor‘s / Master‘s Thesis

Development of a measurement procedure for a piezo-electric atomization unit

Digital additive processes have recently become increasingly popular for the manufacture of electronic structures and components.
Our patented Aerosol-on-Demand (AoD) printing process atomizes nanoparticle-loaded inks, accelerates and focuses them onto a substrate through a sheath gas. The aerosol spray is generated in the atomizer unit by ultrasonic atomization using a piezo actuator.

In order to develop a digital twin of our AoD printer, which will also model the atomizer unit, we need information about the exact piezo constants as well as the geometric and mechanical parameters. For this purpose, a measuring stand/measurement method is to be designed which allows the required parameters of the atomizer unit to be derived by means of easy-to-perform measurements and transferred to the digital twin.



Tasks:

- Conceptualization, evaluation and selection of possible measurement techniques for electrical, mechanical and geometrical properties
- Realization of the measurement process and construction of aids
- Proof of function through measurements

Education, experience, and skills:

- Area of study: Mechanical engineering, Mechatronics
- High motivation and and enjoyment of independent work
- Sense of responsibility and safe working style
- Basic knowledge in python

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