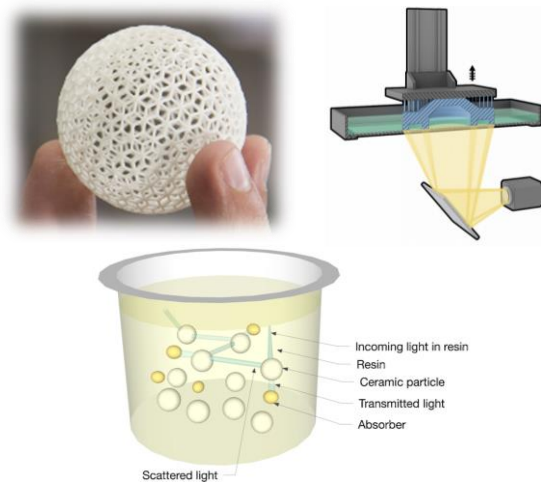


Master's Thesis project – open call (Advanced Materials Science, Technical Chemistry)

Additive manufacturing of lead-free piezoceramics

Scientific background

Piezoelectric materials are essential parts of many modern electronic devices, including sensors, actuators, energy harvesters, and transducers [1,2]. A rapidly developing technology for their production is *additive manufacturing* or 3D printing [3]. Compared with traditional processing methods, it allows the production of complex-shaped objects with minimum waste and targeted properties combination.



What we offer

The main goal will be the design of a *photoactive suspensions* and preparation of *piezoceramics by photopolymerization* using UV light and sintering. Within this thesis, you will get familiar with experimental techniques used for the synthesis and characterization of powders, suspensions, and sintered materials, as well as the photopolymerization principles. Moreover, you will get knowledge on electroceramic materials and skills in microscopy, X-ray diffraction, and electrical measurements of piezoceramics.

Requirements: study programme Advanced Materials Science or Technical Chemistry, self-organized and independent way of work, good English skills.

Terms

Duration: 6 months

Starting date: now

Payment: 500 €/month

Contact

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References

[1] Safari, Akdoğan, Piezoelectric and Acoustic Materials for Transducer Applications, Springer 2008.

[2] www.piceramic.com/en/expertise/piezo-technology/fundamentals/,

[3] Chen et al., 3D printing of ceramics: A review, J. Eur. Ceram. Soc. 39, 661 (2019)

Image sources: Manufacturing Guide Sweden AB, SpecialChem 2022, Zakeri et al., Addit. Manuf. 35 (2020)