

### 3D-printing of ceramic nanoarchitected metamaterials

#### Post-doctoral position (100% TV-L E13 pay scale) in experimental materials science

The [Nanoarchitected Metamaterials Laboratory](#) of Dr. Jens Bauer (Institute of Nanotechnology, INT, at the Karlsruhe Institute of Technology, KIT) is seeking a postdoctoral researcher in experimental materials science for the synthesis and characterization of nanoscale ceramic materials and metamaterials.

Within the frame of the Cluster of Excellence 3D Matter Made to Order (3DMM2O), the Nanoarchitected Metamaterials Laboratory conducts innovative and timely research at the intersection of mechanical engineering, materials science, and manufacturing technology. Our scientific focus lies on nanoarchitected metamaterials and additive manufacturing approaches of such, to develop novel multifunctional high-performance materials, which harness exceptional material size-effects. In this, we **construct materials from the bottom up, from building blocks with rationally designed nanoarchitectures**, such as lattice-truss frameworks, and **develop 3D-printing processing routes to synthesize polymer-derived inorganic solids at the nanoscale**.

The advertised position aims to develop of a novel 3D-printing synthesis route to manufacture ceramic materials and metamaterials with nanoscale three-dimensional architectures. This comprises experimental tasks, such as the two-photon polymerization (TPP) nano-3D-printing of templates, engineering of thermal post-print processing methods, and the characterization of the microstructure and composition of the produced materials. The postdoctoral researcher is expected to co-guide undergraduate and graduate students of the Nanoarchitected Metamaterials Laboratory who assist the above scientific efforts.

Our laboratory is a young and dynamic team with a flat hierarchy. Within 3DMM2O and the INT, we access a vast inventory of state-of-the art instrumentation and are part of a highly visible multidisciplinary network of experts. Further, we are in close exchange with collaborative partners at international top institutions in the United States, providing **ample creative space, and opportunities to take divers responsibilities, and to expand your professional network**.

#### Funding:

Scientific staff position (f/m/d) at 100% TV-L E13, 1 year in the first instance with a chance for extension.

#### Requirements:

Requirements for the application include a Ph.D. degree in materials science, engineering, physics, or chemistry with above-average marks. Applicants must have demonstrated excellent research ability and substantial publication track record and are well-versed in TPP nano-3D-printing, scanning electron microscopy, materials characterization methods, including spectroscopy techniques, thermogravimetric analysis, and differential scanning calorimetry and are skilled in the use of common scientific analysis software, such as MATLAB. Independent and creative work, strong collaboration and communication skills and a strong interest in interdisciplinary work are desired.

#### **3D Matter Made to Order (3DMM2O)**

Cluster of Excellence of the Karlsruhe Institute of Technology (KIT) & Heidelberg University  
[www.3dmm2o.de](http://www.3dmm2o.de)

For further questions about the project, please contact Jens Bauer.

**Please send your application directly to Jens Bauer ([jens.bauer@kit.edu](mailto:jens.bauer@kit.edu)).**

The application period is **open until 31.12.2022**. We will start reviewing applications immediately.

Please indicate the position you are interested in so we can make sure to evaluate your application accordingly. The following documents and data are required for your application:

- CV
- School and University (as applicable: BSc, MSc, Doctorate) certificates
- Transcripts (BSc and MSc)
- Cover Letter
- Letter of Motivation & Abstract of Research Interest

Qualified women are strongly encouraged to apply. Disabled persons with equivalent aptitude will be favored.