



## 1-year positions (PhD/Postdoc) in Friction-Driven Hinges for Multi-Agent Adaptive Structures

(available immediately, 01.09.2022)



MetaLab Research Group (Cluster of Excellence *livMatS*, UniFreiburg, Germany), in close collaboration with DREAM Structures Lab (*LIMC<sup>2</sup>* center, Penn State, USA), is looking for a highly-skilled candidate to join 1-year research project devoted to the development of Multi-Agent Friction-Driven Reconfigurable Adaptive Structures. The research duties include reviewing various approaches enabling friction-driven joints controlled by non-mechanical stimuli. We will fabricate such joints at different length scales (from macro to micro) and incorporate them into 2D systems. Through the activation/deactivation of selected hinges controlled either by a centralized or distributed system to achieve a wide variety of resulting shapes and properties for the system. The project will include the fabrication, characterization, and analysis of such active joints and systems. Candidates with a background in mechanical engineering, materials science, or similar fields are welcome to apply.

Current funding is limited for one year (TVL 13/14 scale), possible extension will require acquiring new funding. We believe this project is well suited for students currently pursuing or recently finished their PhD degree in the EU. We provide an opportunity to work on a highly-collaborative project that will improve your research portfolio.

Please contact me directly via [viacheslav.slesarenko@livmats.uni-freiburg.de](mailto:viacheslav.slesarenko@livmats.uni-freiburg.de) to submit your CV with academic transcripts or inquire about project details. **Note that due to the project's timeline, you should be available for an almost immediate hiring and relocation to Freiburg, Germany.**

**MetaLab Research Group** (<https://slesarenko-lab.com>)

Our research group focuses on developing new materials capable of responding to external stimuli by altering their properties in a predictable manner on demand. We are interested in current topics of reconfigurable mechanical metamaterials and bio-inspired materials, as well as fundamental issues of failure, instability, and wave propagation in materials. We engineer new materials and metamaterials by harnessing sophisticated structure-property relationships, while machine learning assists us in this task. We perform experimental, numerical, and theoretical studies, actively engaging in interdisciplinary collaborations with other research teams.

**Cluster of Excellence *livMatS*** (<https://livmats.uni-freiburg.de>)

The Cluster of Excellence *livMatS* develops completely novel, bioinspired materials systems that adapt autonomously to various environments and harvest clean energy from their surroundings. The intention of these purely technical – yet in a behavioral sense quasi-living – materials systems is to meet the demands of humans with regard to pioneering environmental and energy technologies. The societal relevance of autonomous systems and their sustainability will thus play an important role in their development. The research program of *livMatS* is characterized by highly interdisciplinary collaboration between researchers from a broad range of fields including engineering, chemistry, physics, biology, psychology, the humanities, and sustainability sciences.

**Dr. Viacheslav Slesarenko, PI**

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Living, Adaptive and Energy-autonomous Materials Systems