

## MS 27

### Mechanics of soft active materials: multi-field coupling and failure mechanisms

Anas Kanan<sup>1</sup>, Sergey Kozinov<sup>2</sup>, Markus Mehnert<sup>3</sup>, Elten Polukhov<sup>4</sup>

<sup>1</sup> Technical University of Dresden, Germany

<sup>2</sup> Ruhr-University Bochum, Germany

<sup>3</sup> Friedrich-Alexander University Erlangen-Nürnberg, Germany

<sup>4</sup> University of Stuttgart, Germany

This minisymposium is dedicated to the mechanics of soft active materials exhibiting characteristic multi-field coupling behavior. The considered class of multi-functional materials comprises electro- active polymers, magneto-rheological elastomers and stimuli-responsive gels, among many others. These materials show pronounced electro-mechanical, magneto-mechanical, chemo-mechanical, as well as hydro-mechanical couplings. Recent advancements in constitutive modeling and multi-scale techniques, phase-field approaches, multi-physical failure mechanisms, material and structural instabilities, and experimental investigations pave the way towards multi-functional applications of the next generation.

The goal of the minisymposium is to cover a wide spectrum of recent developments related to the mechanics of soft active materials and therewith to enhance the understanding of the underlying phenomena and processes. This includes research in computational, experimental and theoretical approaches associated with soft active materials, including:

- computational modeling
- multi-scale modeling
- discretization techniques
- material and structural stability analysis
- dissipative phenomena (such as viscoelasticity, fracture, damage, failure)
- experimental methods
- manufacturing techniques