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International Conference on Programmable Materials

Hybrid Event, 12-14 July 2022, Berlin

Symposium: livMatS symposium on energy harvesting, storage and conversion for Programmable Materials
Chairs: Thomas Speck, Chris Eberl
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livMatS develops life-like materials systems inspired by nature. The systems will adapt autonomously to their environment, harvest clean energy from it, and be insensitive to damage or recover from it. The key goal of livMatS is to make the transition from equilibrium or "deeply frozen" metastable, and thus static, materials to dynamic, life-like, non-equilibrium materials systems. The cluster has identified key principles to make this decisive advance towards materials systems.

In the livMatS context, energy has to be harvested from the immediate environment. To convert and store the required energy, energy harvesting functionalities must be an integral part of the materials systems to provide true autonomy. Internal control over energy distribution, and active adaption to external signals will require the installation of chemical, structural, and microsystem-based regulatory networks, which will allow for self-regulating properties and generate adaptability.

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CLUSTER OF EXCELLENCE PROGRAMMABLE MATERIALS

In this symposium, we aim to invite contributions on how to harvest energy from the environment, e.g. from photonic, chemical or mechanical energy. Furthermore, the harvested energy needs to be converted so that the energy can be stored, e.g. in from of electrical, chemical or mechanical energy, as well as offered to the rest of the materials system to fulfill functions, e.g. to adapt to the environment or recover from damage.

Why attend?
– Top-class plenary talks
– Five symposia in three parallel sessions with invited talks on the following topics:
  o Mechanical Metamaterials & Structural and Functional Optimization
  o Polymers with sequence control
  o Shape Memory Polymers & Programmable Property Profiles
  o Design Ideas from Nature
  o Living Materials Systems
– Live and virtual poster presentations
– Panel discussions
– Conference Dinner

Registration and the call for poster presentations will start soon, we will keep you informed.

For further information please check our webpage at www.progmatcon.com

Conference Chairs:
– Prof. Dr. Peter Gumbsch, Fraunhofer IWM
– Prof. Dr. Alexander Böker, Fraunhofer IAP
– Prof. Dr. Chris Eberl, Fraunhofer IWM

Conference Organization: Fraunhofer Cluster of Excellence Programmable Materials, www.cpm.fraunhofer.de

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