



International Conference on Programmable Materials

Hybrid Event, 12-14 July 2022, Berlin

Symposium: Design Ideas from Nature

Chairs: Alexander Böker, Peter Fratzl

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The future of massively digital industrial applications will require materials that are no longer passive components of active devices, but become themselves operational as carriers of information. Indeed, information stored in smart materials that are responsive and even adaptive does not need to be centrally processed which is both time and energy consuming. This is analogous to natural systems where every activity is distributed over many length scales, from molecule to tissue, organ and the whole organism, and where information is processed both in the periphery and centrally in the brain. This, however, requires materials that can be prepared so that they react in a predefined way to a stimulus from the environment, so that tasks can be subdivided a hierarchical way into repetitive operations that are directly carried out by programmable materials and a coordinating function that is typically provided by digital control.

Since natural systems have perfected this way of functioning through millions of years of evolution, they can provide conceptual visions for the development of programmable materials suitable to be employed in this manner.



The symposium will focus on various examples from nature, including the design principles and detailed understanding of their programmed functions as well as the mimicking of these natural functions by purely synthetic materials.

We aim at bringing together people from an international research community to present and discuss the latest trends in the field of programmed materials from nature.

Why attend?

- Top-class plenary talks
- Five symposia in three parallel sessions with invited talks on the following topics:
 - Mechanical Metamaterials & Structural and Functional Optimization
 - Polymers with sequence control
 - Shape Memory Polymers & Programmable Property Profiles
 - Design Ideas from Nature
 - 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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