

Matters of

↶ Precon: Pre-conditioning of the human motor system by non-invasive transcranial magnetic stimulation. Copyright: Lucius Fekonia
↑ Stone Web – Spatial module system made from basalt fiber. Copyright: weißensee school of art and design berlin / Idelene Rapp, Natascha Unger

↓ Footprint in cacao. Copyright: Matters of Activity

Matters of Activity

In the Cluster of Excellence »Matters of Activity« researchers from more than 40 disciplines are investigating the activity of matter. Our central vision is to rediscover the analog in the age of the digital within the activity of images, spaces and materials driven by the integrative nature of the Humanities, the Natural Sciences and the different Design disciplines. Biology and technology, mind and material, nature and culture intertwine in a new way. In this context, the interdisciplinary research and development of sustainable practices and structures is a central concern in areas such as architecture and soft robotics, textiles, materials and digital filters, and surgical cutting techniques.

↶ Biofilm. Copyright: Michelle Mantel
↑ »Scaling Nature (I): Wrinkles«: Liquid Lacquer. Copyright: weißensee school of art and design berlin / Luis Magg

↓ Water vapor structures from the »Cloud Apparatus«. Copyright: Clemens Winkler, Object Space Agency
→ Drawing of the anatomy of cerebral arteries. Copyright: Lucius Fekonia

We are systematically investigating design research strategies for active materials and structures that adapt to specific requirements and environments. We focus on a new role of design, which is emerging in the context of growing diversity and the continuous development of materials and visualization forms in all disciplines.

Objects and materials are not thought of as passive and unadaptable, but rather as active, changeable and recyclable materials. The three closely linked research units »Practices«, »Structures« and »Code« focus on three different approaches to material activity: from the basic level of cultural material practices and the material's inherent active structures to the challenging idea of a novel kind of material code.

Activity

↑ A West African wild silk cocoon. Copyright: Laurence Douny

On the one hand, we are studying traditional cultural techniques such as »Weaving«, »Cutting« and »Filtering« in order to better understand the properties of materials. These partly artisanal practices produce, transfer or process materials. But they also generate knowledge by telling us something about the material, the creators or the environment of the produced goods. One aim of the cluster research is to examine these practices with a long cultural tradition and to make innovative processes out of them.

↓ Extra-cellular matrix liver at Experimental Surgery Lab. Copyright: Igor Sauer
 ↘ Wax moulage from Navena Widullin from the Museum Lab at Berlin Museum of Medical History at the Charité. Copyright: Matters of Activity

↑ Bacterial cellulose curtain. Copyright: Bastian Beyer and Iva Rešetar

On the other hand, we are investigating the relationship between the material and its form and function, as well as how this can affect objects, people and architectural spaces. Our focus is on the merging of the symbolic and physical dimensions. We no longer conceive the material's inner activity as dysfunctional, but we recognize it as an operative code, re-inventing the analog in times of the digital.

So what does that mean exactly? In the future, you might see surfaces emerging from certain bacterial activities in ways that are closely linked to weaving processes. You might use »one-material devices« that are at the same time soft and hard, flexible and stiff or shape-changing materials that adapt to certain environmental necessities. You will visit exhibitions showing active objects and processes – so far fixed in a certain state. Or your surgeon will use an adaptive digital twin that helps to simulate the intrinsic activity of body tissue in order to make medical procedures even more accurate and safe in the long run. All this is made possible by a new culture of materials and a change of the perspective on the relationship between nature and culture, which is embodied by »Matters of Activity«.

Design: INODE Berlin Oslo

MATTERS OF ACTIVITY

- 40 disciplines
- More than 100 researchers in the first projects
- 8 Cluster professorships

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HOST INSTITUTION

- Humboldt-Universität zu Berlin

PARTNER INSTITUTIONS

- Charité – Universitätsmedizin Berlin
- Freie Universität Berlin
- HTW University of Applied Science
- Max Planck Institute of Colloids and Interfaces
- Museum of Decorative Arts, State Museums of Berlin, Prussian Cultural Heritage Foundation
- Technische Universität Berlin
- weißensee school of art and design berlin

↓ Stripes of wild silk and indigo dyed cotton. Copyright: Salif Sawadogo

↑ Movement pattern of a biofilm. Copyright: Cécile Bland, MPKG