

## Press release

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### Technology Briefing at Empa

## Materials with brains

**Intelligent materials will make everyday life easier in future. National Research Programme (NRP) 62, led by former Empa Director Louis Schlapbach, is focusing on precisely these topics. At a Technology Briefing held at Empa in mid-July, researchers presented six of the total of 14 projects in more detail to a large group of interested experts.**

Using original approaches to gain new knowledge – according to Louis Schlapbach, that is the aim of the "Intelligent Materials" research programme. The programme currently funds 14 research projects in total, which are laying the foundations for new techniques in the fields of medicine, technology and energy. Around 100 interested visitors were given lots of fascinating information about block copolymer membranes and nanoreactors which serve as the basis for novel interactive biosensors, about smart nanomaterials which transport medicines directly into the affected cells, about a hydrogel that reacts to warmth and then develops its healing effect, about a novel and pain-free method of measuring blood sugar levels in premature babies, about sea cucumbers that have material properties that we can copy something from and about new possibilities for purifying exhaust emissions from biogas and natural gas engines.

### Novel catalytic converters for clean cars

As part of NRP 62, Empa is working on alternative catalytic converters with a low precious metal content (palladium or platinum) for natural gas vehicles. Natural gas is an alternative fuel, but it requires special aftertreatment of the exhaust gas to remove traces of non-combusted methane from the exhaust emissions. The project team led by Anke Weidenkaff from the Laboratory for Solid State Chemistry and Catalysis and Christian Bach from the Laboratory for Internal Combustion Engines is exploiting the customised properties of new perovskite-like metal oxides. "The stable perovskite structure gives the material exceptional regenerative properties and durability in the hot exhaust gas flow," says Anke Weidenkaff. This project is particularly important in light of the increasing demand for natural gas vehicles and the inadequate aftertreatment method currently available.

### **From groundwork to the development stage**

The initial phase of NRP 62 was recently concluded. Now begins the application-oriented research and the search for partners for subsequent CTI projects – a new departure within the National Research Programme concept – which should lead to marketable innovations by 2016. The aim of National Research Programmes is to investigate basic concepts and ultimately translate them into marketable products. It is not surprising that the presentation of six selected projects took place at Empa, as Director Gian-Luca Bona emphasises, "Empa's objective is to push scientific knowledge onto the market, to build a bridge between research and its practical application". The Technology Briefing at Empa provided an ideal platform for this.

The next Technology Briefing on the theme of "Intelligent Buildings in the 21st Century" will take place on 16 October 2013 in Berne. On 29 October, the Technology Briefing is back home at Empa on the subject of "Material Analysis of Thin Layers and Surfaces".

### **Further information**

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At the subsequent poster show, the researchers displayed details of their projects.

Images are available to download from [www.empa.ch/bilder/2013-07-01-MM-IntelligenteMaterialien](http://www.empa.ch/bilder/2013-07-01-MM-IntelligenteMaterialien).