

## Media release

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### **Empa solar cells at the Swiss Museum of Transport**

## **Movement through sunlight**

**«The Sun Moves» is a special exhibition at the “Verkehrshaus”, Swiss Museum of Transport in Lucerne, and last week it gained a new attraction – a showcase full of brightly colored, rotating solar cells which demonstrate the power of the sun and are intended to encourage visitors to think about solar energy.**

The showpiece was conceived and designed by two artists, Daniel Imboden and Thomas Geiger, who also both happen to be researchers in Empa's Functional Polymers Laboratory. Nine transparent, colored solar cells are mounted on a framework which rotates slowly about its own axis. The silent movement and the colored shadows which the installation throws in its vicinity radiate tranquility and encourage the viewers' thoughts to drift towards the sun and its energy, guiding them to the core idea of the exhibition – the sun moves. The installation in the Swiss Museum of Transport, which can be viewed until October 21<sup>st</sup>, draws the viewers' focus to sustainable mobility. Means of transport are shown which use sun's energy as a source of power. In addition to a solar road vehicle (which typically is the first thought which springs to mind) sailing boats and gliders belong to this category too. After all, it is thanks to solar energy that winds blow and thermals occur.

### **Special solar cells for diffuse light**

Empa researcher Thomas Geiger, in collaboration with the Swiss company Solaronix, have created a "solar window" which is fitted with a number of special solar modules known as Grätzel cells (after their inventor, Michael Grätzel a researcher at the Swiss Federal Institute of Technology, Lausanne). These solar cells convert the sun's energy using various organic dyes, and not with crystalline silicon material as in conventional types. They are transparent and also function in diffused light. The colorful rotating work of art in Lucerne, in which each solar cell supplies the power for its own motor, will therefore work just as well in bright sunshine as in subdued, diffuse lighting of the exhibition, between other displays and viewers drifting by.

### **Three colors – three stages of development**

The three colors of the showpiece are also representative of the stages of development which the Grätzel cell, which was first described and patented a good two decades ago, has undergone. The dark red elements

use the original dye with which Grätzel constructed his first cell, a ruthenium complex. The turquoise colored cells take advantage of a chemical developed in Empa's laboratories based on dyes from the squaraine family derived from squaric acid. The orange colored cells are based on a new development by the Solaronix company, which has been commercially developing Grätzel cell technology since 1993.

### Opening times

"The Sun Moves" exhibition can be viewed daily from 10am to 6pm until October 21<sup>st</sup> in the inner courtyard of the Verkehrshaus, Lidostrasse 5, 6006 Lucerne.

For more information see <http://www.verkehrshaus.ch/en/museum/>

### Further information

Dr. Thomas Geiger, Functional Polymers Laboratory, Tel. +41 58 765 47 23, [thomas.geiger@empa.ch](mailto:thomas.geiger@empa.ch)

### Editor / Media contact

Rainer Klose, Communication, Tel. +41 58 765 47 33, [redaktion@empa.ch](mailto:redaktion@empa.ch)



The artwork consists of solar cells which convert sunlight into electric current with the help of three different dyes. These devices are also known as «Grätzel cells». (Photo: Empa)

Youtube video at: <http://youtu.be/UkJKqw7zrs>



"The Sun Moves" exhibition in the inner courtyard of the Swiss Transport Museum in Lucerne. (Photo: Verkehrshaus)



Thomas Geiger explains how the solar work of art functions. (Photo: Verkehrshaus/Damian Amstutz)

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