

Media Release

Dübendorf, St. Gallen, Thun, Switzerland, 7 April 2011

Empa opens laser centre in Thun

Large surfaces can be machined with nanometre precision

On 7 April 2011, in the presence of its Director, Gian-Luca Bona, and the Mayor of Thun, Raphael Lanz, Empa's new laser centre, which houses the only UV laser facility of its kind in the world, was opened in Thun. The facility will help researchers to develop new kinds of surfaces. Commercial partners will be able to use it to structure large films with micro to nanometre precision.

Now very large surfaces can be microstructured at Empa's new laser centre in Thun. Centrepiece of the facility, which is run by Empa in close collaboration with Crealas GmbH – one of only three worldwide – is a pulsed ultraviolet (UV) laser beam, which ablates nanometre-thin layers precisely from large surfaces of up to three square metres. A granite table weighing 19 tonnes acts as the base and this was transported to Thun in dramatic fashion in October 2010.

Materials with new physico-mechanical properties

Surface microstructuring creates new physico-mechanical properties. For example, the microstructures can reduce friction, lower the amount of drag or inhibit fungal growth. Films for optical structures with light-controlling properties can also be manufactured, for example 3D screens that work without glasses. Patrik Hoffman, Head of Empa's "Advanced Materials Processing" laboratory, imagines using it to develop new kinds of windowpanes which would light up internal spaces at night and act as solar cells during the day. He also has the intention of creating materials for electrochemical processes, using them to form electrical connections on flexible screens or solar cells.

Unique services to industry

Not only will materials science benefit from the new facility, it also offers new prospects to Empa's commercial partners. The laser machining of large surface areas means moulding tools can be manufactured. Industry needs these in order to produce structured films cheaply and in bulk. Until now, moulding tools have always had to be assembled from several parts, whereas the new laser centre enables them to be produced in a single piece.

Films for optical security features can also be manufactured at the facility. A number of countries are already trying to replace the holograms on their banknotes with microstructured films with optical 3D effects. Empa Director Gian-Luca Bona said: "The new laser centre means we can offer services that are unique in Switzerland. This will open up completely new opportunities for both our commercial and research partners."

Further information

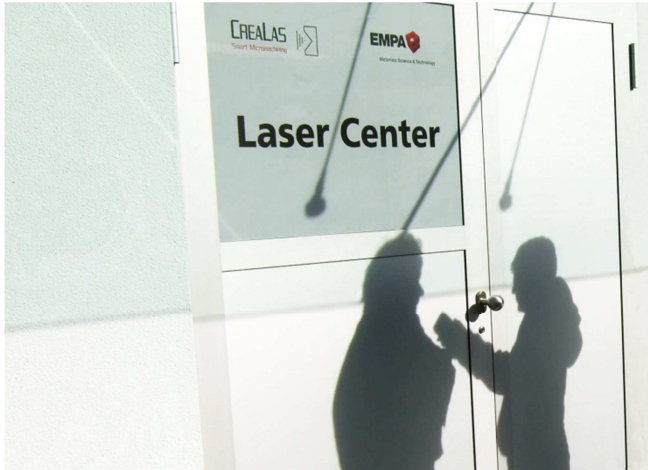
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Text and pictures in electronic format are available from redaktion@empa.ch. The pictures can also be downloaded from www.empa.ch/bilder/laserzentrum.



<http://www.empa.ch/bilder/laserzentrum/einweihung-b1.jpg>

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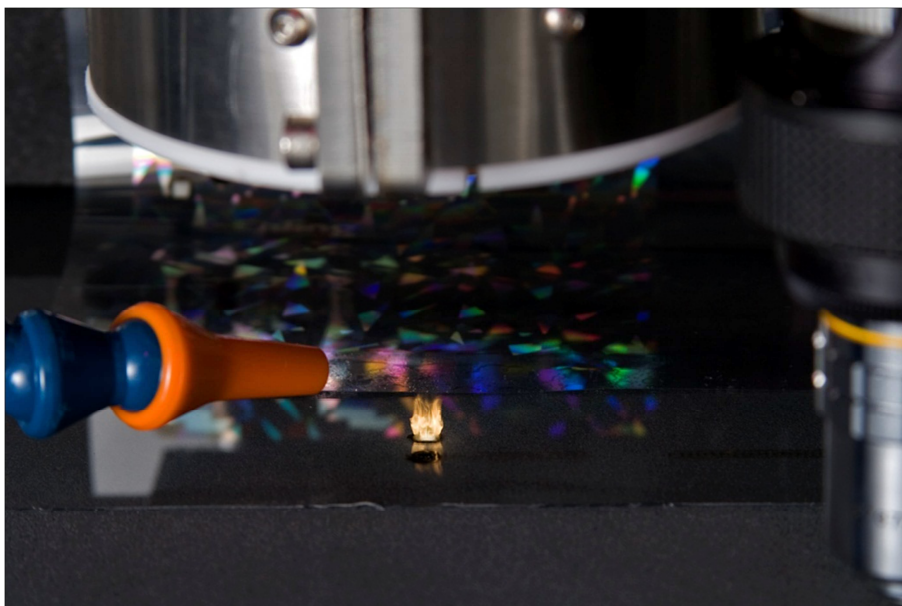
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On 27 October 2010, a piece of granite weighing 19 tonnes was delivered to Empa in Thun, to be used as the base for the new laser centre.



<http://www.empa.ch/bilder/laserzentrum/laserzentrum-b1.jpg>

Karl Böhlen, director of Crealas GmbH, in the new laser centre.



<http://www.empa.ch/bilder/laserzentrum/laserzentrum-b3.jpg>

UV laser machining gives materials new physico-mechanical properties. For example, the microstructures reduce friction, repel water or inhibit fungal growth.