Events and Fairs

Hannover-Messe 2011
April 4 - 8, 2011, Hannover, Germany
Fraunhofer Pavilion Surface Technology
hall 6, booth H21

LASER World of PHOTONICS (Fair)
May 23 - 26, 2011, Munich, Germany

Lasers in Manufacturing Conference (LIM 2011)
May 23 - 26, 2011, Munich, Germany

V2011
(Exhibition and workshops for plasma surface technology and vacuum coating)
October 17 - 20, 2011, Dresden, Germany

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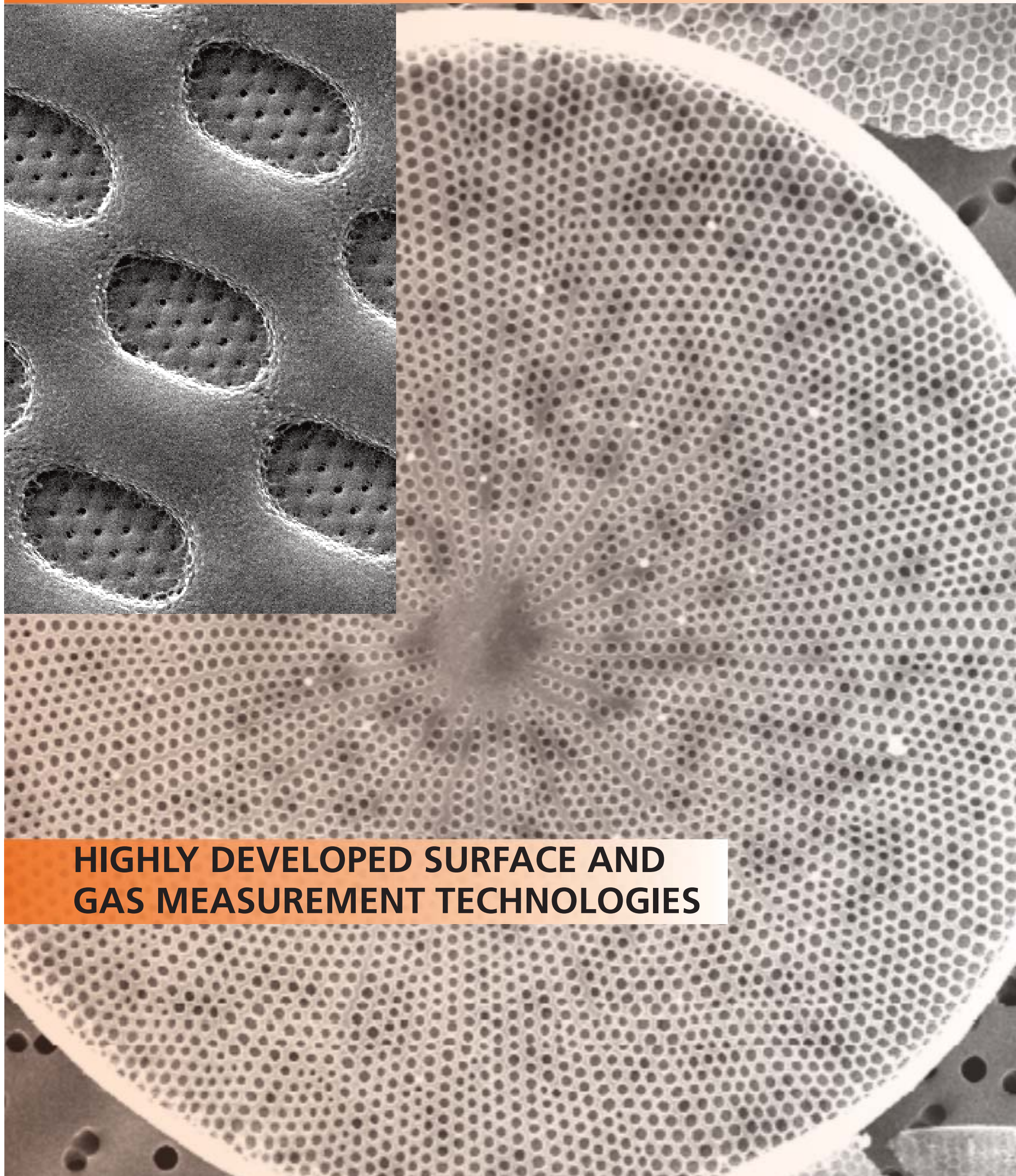

HIGHLY DEVELOPED SURFACE AND GAS MEASUREMENT TECHNOLOGIES

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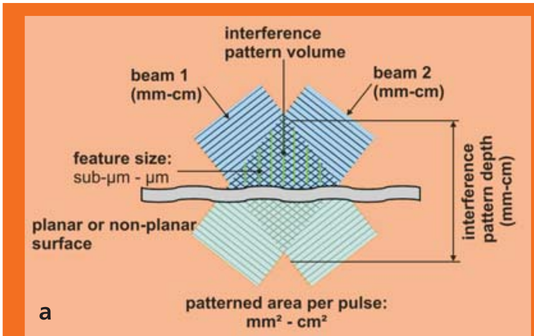
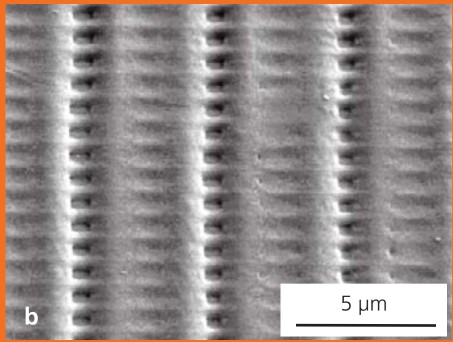
Large scale fabrication method of sub-micrometer arrays

Periodic patterned surfaces act as intelligent materials capable of selectively influencing multiple functionalities with applications in biomaterials, surface engineering, photonics and sensor systems. Numerous techniques have been applied to fabricate such micro- and nano features. However, most of the methods are time-consuming and expensive. At the Fraunhofer IWS, the Surface Functionalization Group applies and further develops the Direct Laser Interference Patterning (DLIP) technique.



This method involves the modulation of the laser beam intensity by generating interference patterns, see Figure (a). In this way, the regions corresponding to the interference maxima positions can be locally ablated, molten or modified. Depending on the number of laser beams interfering on the substrate surface, a wide range of 2D and 3D micro- and sub-micrometer periodic



structures, e.g. line-, grid- or dot-like patterns, can be fabricated. Moreover, by using high power lasers with short pulse duration and by varying the laser wavelength (IR- to UV-range), the surfaces of different materials like metals, polymers or ceramics can be directly modified. The process provides the opportunity to create patterns on planar as well as on non-planar devices. Additionally, by overlapping different periodic surface structures it is also possible to create complex structures as shown in Figure (b) for titanium and on the cover. Fabrication speeds in the order of several centimetres square per second are possible, and thus offering a route for large scale production.

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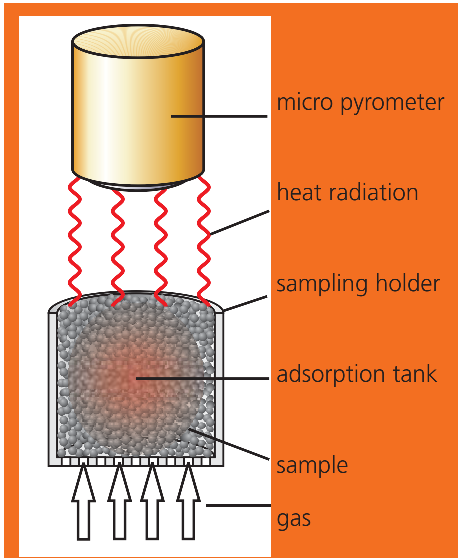
infraSORB: adsorption analysis for porous materials

Porous materials are used for different applications in chemical industries or for everyday products. The quality of these materials is tested by adsorption measurement. However, the conventional measurement techniques are expensive and time-consuming. That´s why the Fraunhofer IWS and the company Rubotherm have developed the rapid test device infraSORB for the evaluation of the adsorption capacity and for fast and simple detection of porosity.

The test sample is thereby exposed to a gas flow which contains the gas to be adsorbed. If adsorption takes place on the material, adsorption heat will be released. This heat is continuously measured by using a contactless optical temperature sensor.



The degree of temperature rise and the temperature profile are the indicators for the adsorption capacity. The rapid test device infraSORB is able to characterize simultaneously and within only few minutes up to 12 samples regarding their porosity.

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