ABOUT DFM

DFM is Denmark's National Metrology Institute (NMI). DFM is a signatory to the CIPM-MRA arrangement that ensures mutual recognition of measurements worldwide

TRACEABILITY

All measurements are traceable to recognised national and international standard.

ISO CERTIFICATION

All services are covered by DFM's ISO 9001 certification

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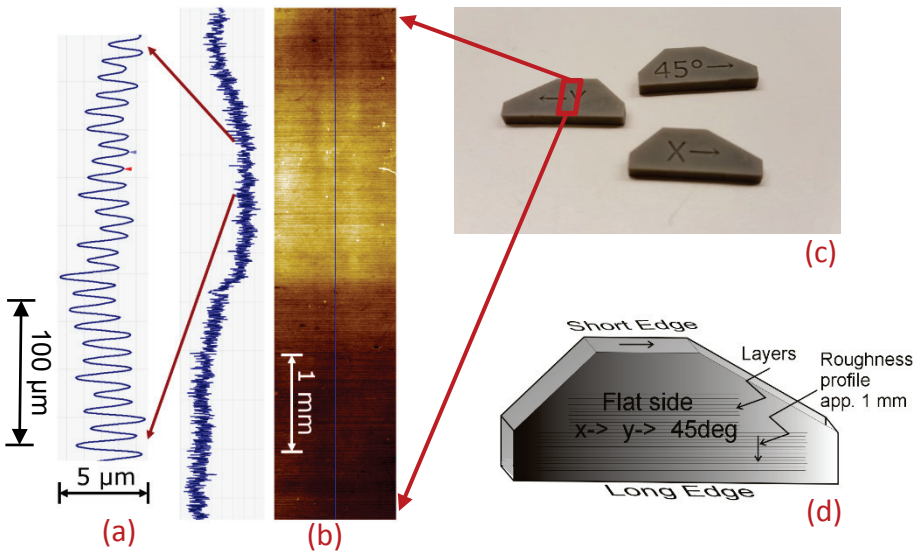
Test of 3D printed surfaces

Accurate measurement of the surface topography and roughness of 3D printed objects



In the middle (b): Surface topography image of a 3D printed ceramic (silicon nitride) surface. The image is a side view of more than 3 000 layers printed from bottom to top.

Left (a): An (average) surface profile shows the layered structure of the sample. Height of the bumps - related to the individual layers – varies between 1.4 and 3.3 µm. The average layer thickness is measured to (13.2 ± 0.2) µm.

Right: (c) is a photo of the 3D printed samples and (d) is a sketch with the layered structure indicated. The sample is fabricated by Lithoz (www.lithoz.com)

Application and specification

The surface topography is important for most functionality, and traditionally a low roughness value has been seen as a prove for a high quality. DFM can test and accurately measure the surface topography and roughness of 3D printed surfaces over areas up to several square centimeters having height amplitudes up to one millimeter with an accuracy down to 0.01 µm. Measurement of roughness parameters follows international standards and DFM can assist in choosing the parameters that best quantify the quality or functionality of the surface. The competence has been developed partly during the European metrology project MetAMMI – Metrology for 3D-printed medical implants (projects.lne.eu/jrp-metammi)