

HT Diffraction Grating Molds

Light management using Diffraction Gratings – DG

Diffraction gratings can be used to optimise and enhance the performance of optical systems. Applications include the enhancement of light extraction out of light emission devices, such as LED or OLED sources by efficient light outcoupling from high-refractive-index-materials, or the realisation of high-throughput detection devices. HT-DG-500 gratings are designed to be used in mass-production replication process for fast and cost-effective production. We have chosen the structure parameters with the aim to be suitable for a variety of applications.

How HT-DG works

Surface diffraction gratings are flat optical elements with a regular pattern, which split incident light into a number of diffraction orders. The number of diffraction orders and the respective diffraction efficiency in the single orders depend on wavelength and incidence angle of the incoming light and on the refractive indices of the materials involved.

By choosing the right set-up, diffraction gratings can be used to couple light into or out of wave guides and in this way increase the performance of optical systems, or to split light into several light beams. They can also be used in wavelength selective detector devices.

HT-DG applications

- Beam splitting for short visible and UV wavelengths, especially for collimated or diverging beams with a large beam diameter
- Outcoupling from light emission devices such as LED/OLED
- Optical films
- Incoupling of light into waveguides
- Laser sensor devices based on a variation of refractive indices for fast reading over large areas
- Thin-film and organic photovoltaics

Users of HT-DG molds

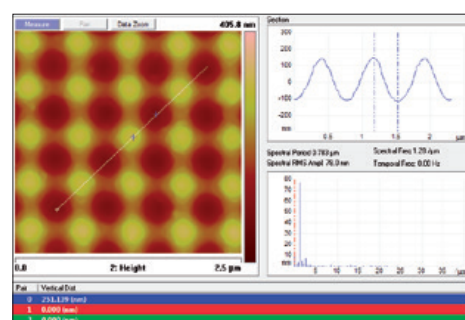
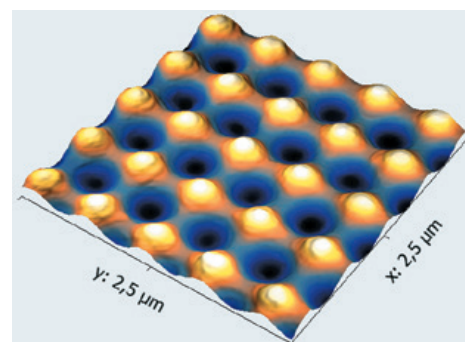
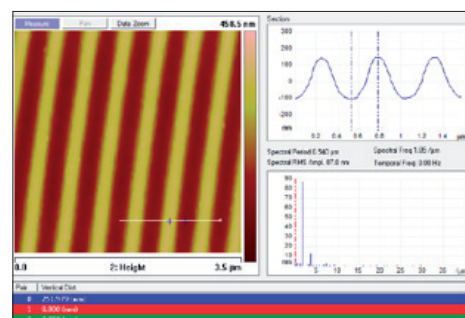
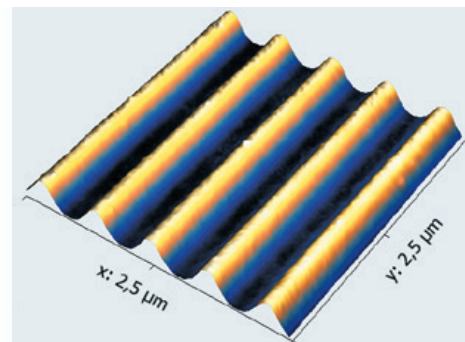
- Film manufacturers – for product and process development work
- Manufacturers of light emission devices
- Manufacturers of fast reading sensor devices
- R&D institutes – for research activities on micro-optical structures
- Equipment manufacturers for injection molding, thermal embossing and Roll-to-Roll production equipment – as a reference to demonstrate the technical capabilities and homogeneity of their production processes

Specifications

	HT-DG-L500	HT-DG-C 500
Grating type	Linear Grating	Crossed Grating
Profile shape	Sinusoidal	Sinusoidal
Pitch	522 nm	500 nm
Average depth	250 nm	250 nm
Material	Nickel	Nickel
Mold size*	100 mm x 100 mm	100 mm x 100 mm
Active area*	80 mm x 80 mm	80 mm x 80 mm
Mold thickness*	300 µm	300 µm

* Customised sizes and thicknesses upon request

HT-DG-500



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