

# NANO-OPTICS

Unique lighting solution enabling new applications, modeling, precise management and control of the flux of LED lighting.

The principle is based on the use of new flat plastic lenses, which have outstanding properties due to the complex structures inside and on the surface of the plastic. These structures, most often hundreds of nano- or micro-meters in size, create targeted breakages, diffraction, interference, resulting in the modeling and routing of individual rays and light beams, the sum of which produces the desired light effect, or the type or nature of light.

The structures "shaping" the light are created using an electron beam lithograph, UV lithography or on the IQ structures nano-printer, a matrix is subsequently formed and the lens can be printed in any large series.

**Linear lighting** – offices, halls, warehouses, factories, supermarkets  
**Spotlights** – streets, shops, theaters, hotels, cities, airports, stadiums, cars

In addition to an extension to the possible uses of LED lamps, this type of lens provides significantly higher quality and relief of light. A fundamental change will be production technology of lighting plus highly demanded passage and spreading of light will be replaced by a range of basic components, precise spotlights, reflectors and facade light will no longer be required, and this will lead to completely new lighting design. We have something to look forward to.

## LIGHTS WILL LOOK AND WORK DIFFERENTLY

One small, thin lens with nano- and micro-structures from IQ Structures

Structure: 0.5 – 1.5 µm or as required  
Produced using: electron lithograph  
How? It is a secret!  
Application: almost everywhere without limitations

Active surface: 17 mm<sup>2</sup>  
Thickness: 0.8 mm  
Material: PMMA  
Weight: 2 g  
Lens diameter: 25 mm

A light will be where we need it and how we need it, finally.

Presented by IQ Structures for the first time at the trade fair Light + Building in Frankfurt in 2016.

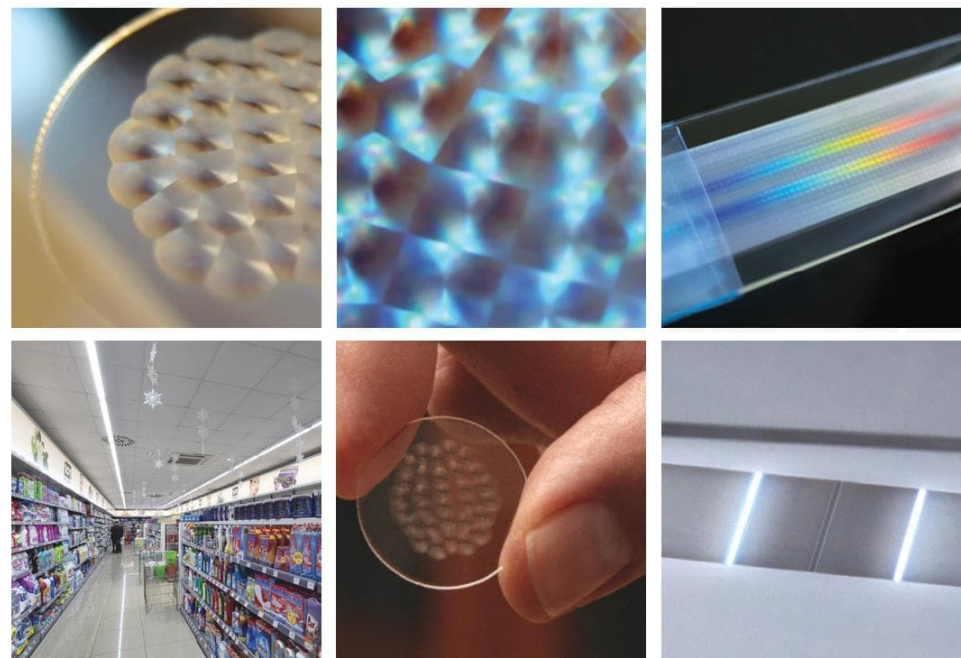
**IQ  
STRUCTURES**

” Nano-optics is a new and promising field. We are constantly pleasantly surprised by their possibilities. “

## Micro- and nano-relief optics

By creating complex micro- and nano-structures we are able to produce optics with properties that exceed many existing lighting systems. The advantages of LED together with our nano-optics provide new options for interior and exterior lighting. They increase quality, remove unwanted contrasts and glare, and the direction and intensity of lighting are manageable. Bulky and expensive glass lenses are replaced by plastic embossed lens, which change the appearance of the lights.

In comparison with classical optics we can achieve not only new designs and superb light control but also much higher production speed and efficiency. Instead of difficult processes such as injection molding we can simply print our optics using less material and energy.



## Use

Automotive industry, concert halls, theaters, airports, public places, streets, halls, hypermarkets, shops, offices, apartments, as well as specific light sources for studio and exterior art or film productions.

◀ This picture is a part of official exhibition "Nanormal world.cz" organised by Czech centres.