IQS
GROUP

IQS GROUP

**“We are architects in the nanoworld.
We create sophistically designed and calculated
nanostructures to give materials and products
new amazing functions and features.”**

Tomáš Těthal, CEO, IQS Group

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IQ STRUCTURES

Influences the world
of the protection of banknotes,
identity documents, valuables
and goods against fraud
and counterfeiting.

IQS NANOPTIQS

Uses a revolutionary approach
to create thin and miniaturized
printed optics with unique
features.

IQS NANO

Focuses on the research
and development of micro
and nano components.

IQ STRUCTURES

IQ Structures delivers new, innovative anti-counterfeiting solutions. Combining design and its own cutting-edge technologies, IQ Structures produces complex optical solutions that bring a new level of safety for banknotes, IDs, documents, goods, etc.

Sophisticated algorithms for calculation of 3D surfaces

Mastering

We build and manage nanostructures to control light. We are equipped with technologies that allow us to record and build structures with a precision of several nanometres.

Our mastering technologies:

- electron-beam lithography,
- UV lithography,
- laser interferometry,
- our own 3D nano printer,
- and many others.

IDs and Passports

IQ proID: holographic solution for the protection of polycarbonate IDs and passports

Banknotes

Unique optical security features for the protection of paper and polymer banknotes

Documents, Valuables and Brand Protection

Holographic protection of documents, security labels for the protection and authentication of goods, holograms embossed directly into metals, holographic microdots

find out more

Stay ahead of the banknote counterfeiters

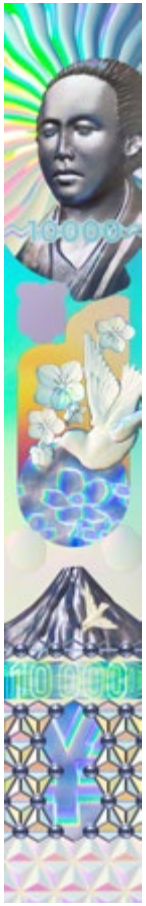
Unique optical security features
for protection of paper
and polymer banknotes

Increase protection using breathtaking effects

Unique optical security features have been developed to protect banknote stripes, patches as well as threads

All graphical themes and elements used in banknote design may be converted into visually attractive holographic patterns. Combination of advanced origination technology and aesthetics driven approach provides the optical security features with easy and unambiguous authentication and extraordinary protection against counterfeiting.

- patches, stripes and threads
- paper, hybrid and polymer banknotes
- strong overt features for naked eye authentication (covert and forensic features available)
- unseen visual effects with gaming properties



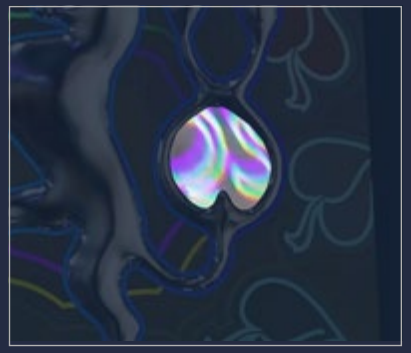
Unseen holographic effects

Make use of non-copyable, beautiful, and easily recognizable security features for your valuables.

Combine any effects from our gallery, feel free to align them with your graphic designs

White 3D Bas-relief effect

Rainbow 3D Bas-relief effect



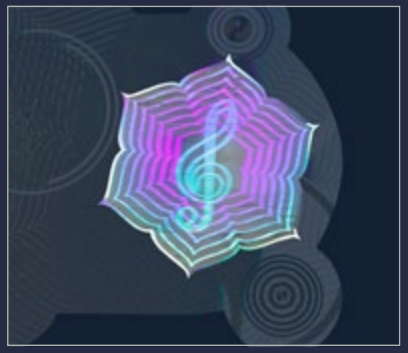
Keyhole effect

Modified Axicon effect

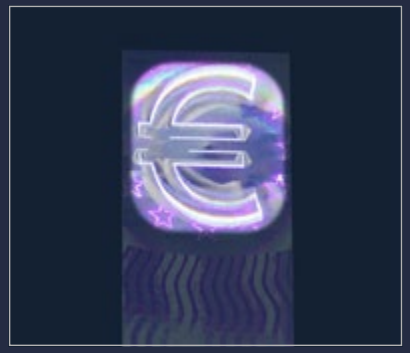
Moving effect

Kinetic effect

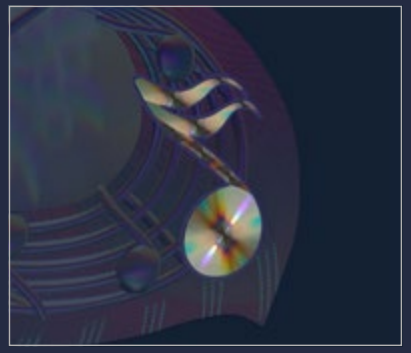
Semi-transparent White
3D Bas-relief effect



Sharp 3D effect



Full 3D effect



Lens effect

Find out more

Document, valuables and brand protection.

Holographic solution for the protection of polycarbonate IDs and passports.

Holographic protection of investment gold.

Commemorative silver coin with embossed hologram of Škoda 498 locomotive.

Sophisticated holograms in harmony with printed elements and other security features (UV inks, OVI inks, tactile features, transparent windows).

Unique large area hologram on a vinyl record.

World award-winning solutions

Our products and solutions have repeatedly won international awards

IHMA Excellence in Holography 2018

BEST APPLIED DECORATIVE/ PACKAGING PRODUCT
Armstrong and the trumpet

IHMA Excellence in Holography 2019

BEST ORIGINATION
IQ Banknote Stripe

Government Security Awards 2019

ANTI-COUNTERFEIT PROTECTION
IQ proID

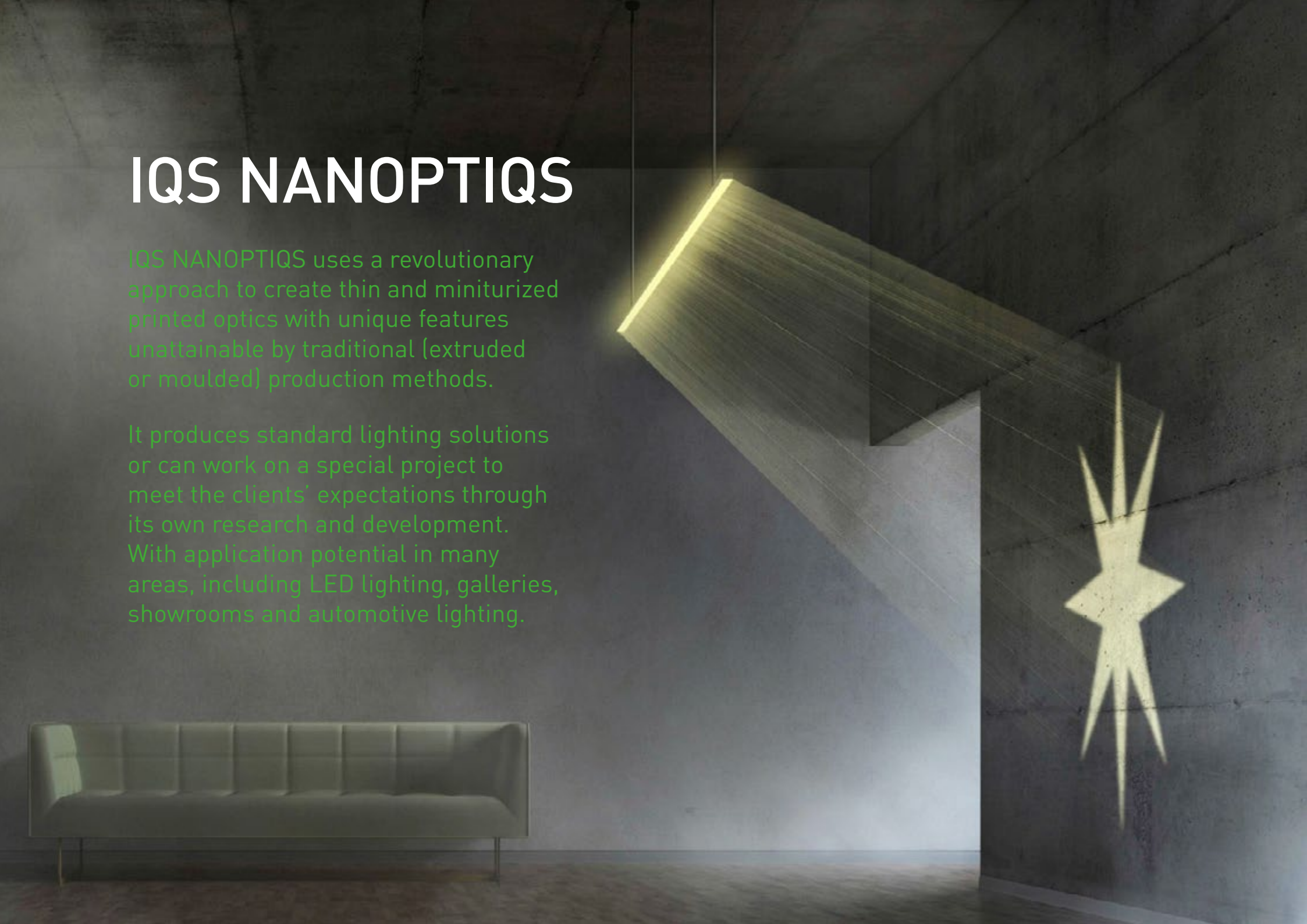
IHMA Excellence in Holography 2022

BEST ORIGINATION
IQ STRUCTURES
IQS Singularity

IQS NANOPTIQS

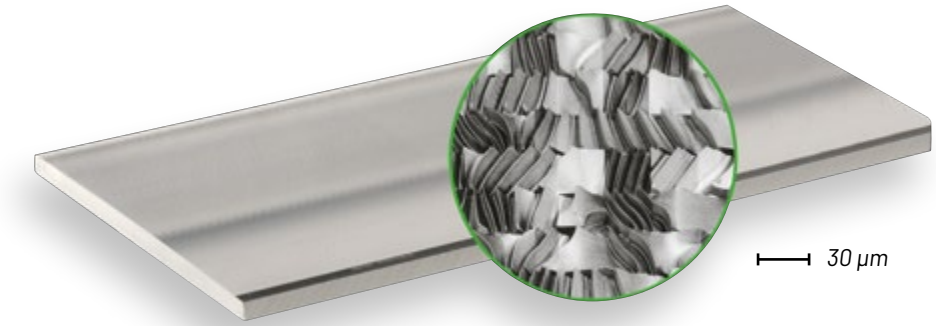
IQS NANOPTIQS uses a revolutionary approach to create thin and miniturized printed optics with unique features unattainable by traditional (extruded or moulded) production methods.

It produces standard lighting solutions or can work on a special project to meet the clients' expectations through its own research and development. With application potential in many areas, including LED lighting, galleries, showrooms and automotive lighting.



IQ Linear
Cutting-Edge Flat Optics

We found a way to supply luminaire manufacturers with the best-performing, affordable, single-element linear optics by using nanotechnology.



3D model showing a typical microrelief surface. The microrelief depth is exaggerated in order to clearly show the facets.

IQ System
Precision of Light Distribution

IQ System is a modular optical system integrating all optical functions essential for any luminaire. It gives the customer full control over the high definition light distribution and freedom in design.

Custom Solution
Discover Nanoptics Possibilities

We enable luminaire manufacturers to produce products that bring joy and benefits to users. We develop and produce micro-optic elements enabling the full use of the potential of modern LED sources. We tread new paths and set trends in the industry.

Slim Dimensions

Precise Light Management

Easy to Assemble

IQS NANO

IQS Nano specializes in cutting-edge 3D nano printing. The **IQ**NANO**3D** printer achieves exceptional printing speeds while maintaining unparalleled resolution. IQS Nano has extensive experience in developing custom solutions and products utilizing functional micro and nano structures, particularly in optics, synthetic holography, precision engineering, and biomedical applications.

IQS nano also provides development and production services for nanoscale optical and functional elements, helping clients push the limits of nanotechnology in industries such as microelectronics and medical devices.

IQ NANO 3D

Extreme resolution with the fastest printing speed

The IQnano3D printer provides a complex solution for applications requiring high-precision additive manufacturing.

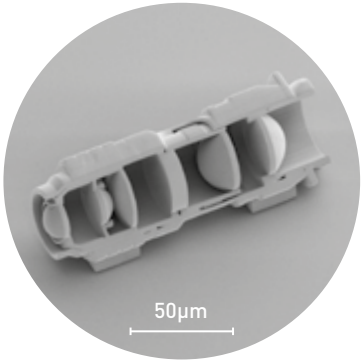
- Ultra-fast 3D nanoprinting with resolution down to 150 nm
- Capable of printing objects from micro to meso scale
- Flexibility in design and user-friendly data preparation
- Broad range of printing materials
- Customisable device

Masjid al-Haram

The smallest model of the largest mosque in the world – The Great Mosque of Mecca. The size of the 3D nano model is 820 µm x 643 µm x 135 µm which is the thickness of a sewing needle.

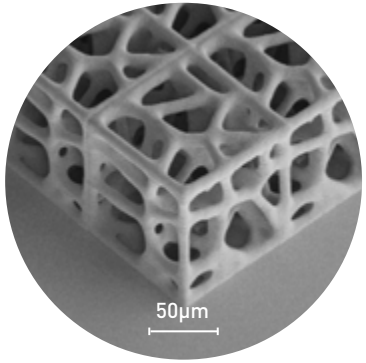
It was printed using microstereolithography with the resolution of 250 nm. It is in the approximate scale of 1:600,000 to real Masjid al-Haram. The model was created on a silicon wafer using 3D nano-printing based on two-photon lithography and is coated with an extremely thin layer of gold (100 nanometres).

Endless possibilities of applications



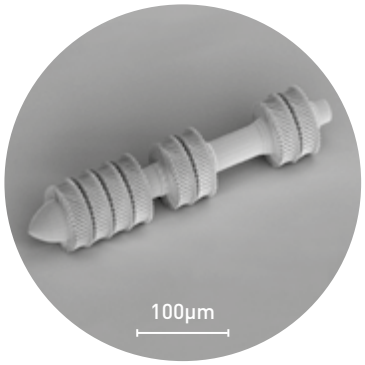
MICRO OPTICS
Micro-optical components

Multiple writing modes enable the fabrication of optical microstructures with complex topology with minimal stitching artefacts.



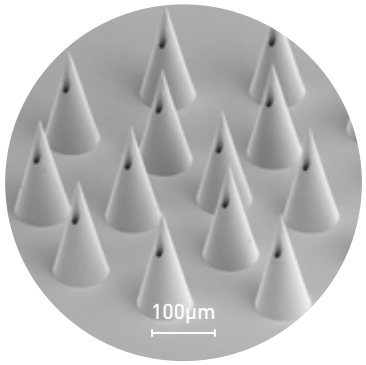
BIOMEDICAL ENGINEERING
Tissue engineering

3D bio-scaffold is a porous material with pore size of approx. 0.1 mm. If such scaffold is populated with living cells, they eventually form a whole piece of tissue.



MEMS
Mechanical systems & components

3D printing at the nanoscale brings the ability to produce intricate parts like gears, levers, or hinges that must interact with high precision.



3D MICRO DEVICES
Microneedles

The microneedles are so thin and short that they do not reach all the way to the nerve endings in the skin, and thus enable painless medicine application.

Powered by creative minds and 25+ years of experience

We have a unique mixture of technologies, custom-built equipment and top experts in their respective fields under one roof.

Exclusive results using creative combination of cutting-edge technologies

Unique set of technologies allows us to create sophisticated nanostructures with extraordinary optical properties.

e-beam lithography | UV lithography | ion etching | 3D nano-printing

Innovative optical features and extra safe security elements.

Expertise at all production levels

We cover all steps of the production process.

Security elements artwork

Holographic effects simulation and pre-processing calculations

Master production

Effective manufacturing

Precision verified by own analytical instruments

The fact that we work at the nanoscale requires the use of special measuring devices to verify the proper function of our products.

We share a passion for pushing technological boundaries

We enjoy confronting challenges in anti-counterfeiting protection. That is why we succeed in bringing new trends to the industry and why we are a key partner of the world's largest banks and document-issuing authorities.

Quality and security certification

The Company is certified for the industrial standards ISO 14298, ISO 27001, ISO 14001 and ISO 9001.

Interested in technical details? Price quote? Lead times?
Feel free to contact us

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