



IQS
GROUP

IQ Structures

Optical protection against counterfeiting

Nanoptiqs

Micro- and nano- structured optics

IQS Nano

Micro- and nano-structured functional elements



IQS
GROUP

Research and development activities

Strong technical competence based on 25 years of research and development in nanoengineering and material science.

- **12 years on the market**
- **90+ employees**
- **27 patent families**
- **2 540 000 dpi**

In-house mastering and manufacturing

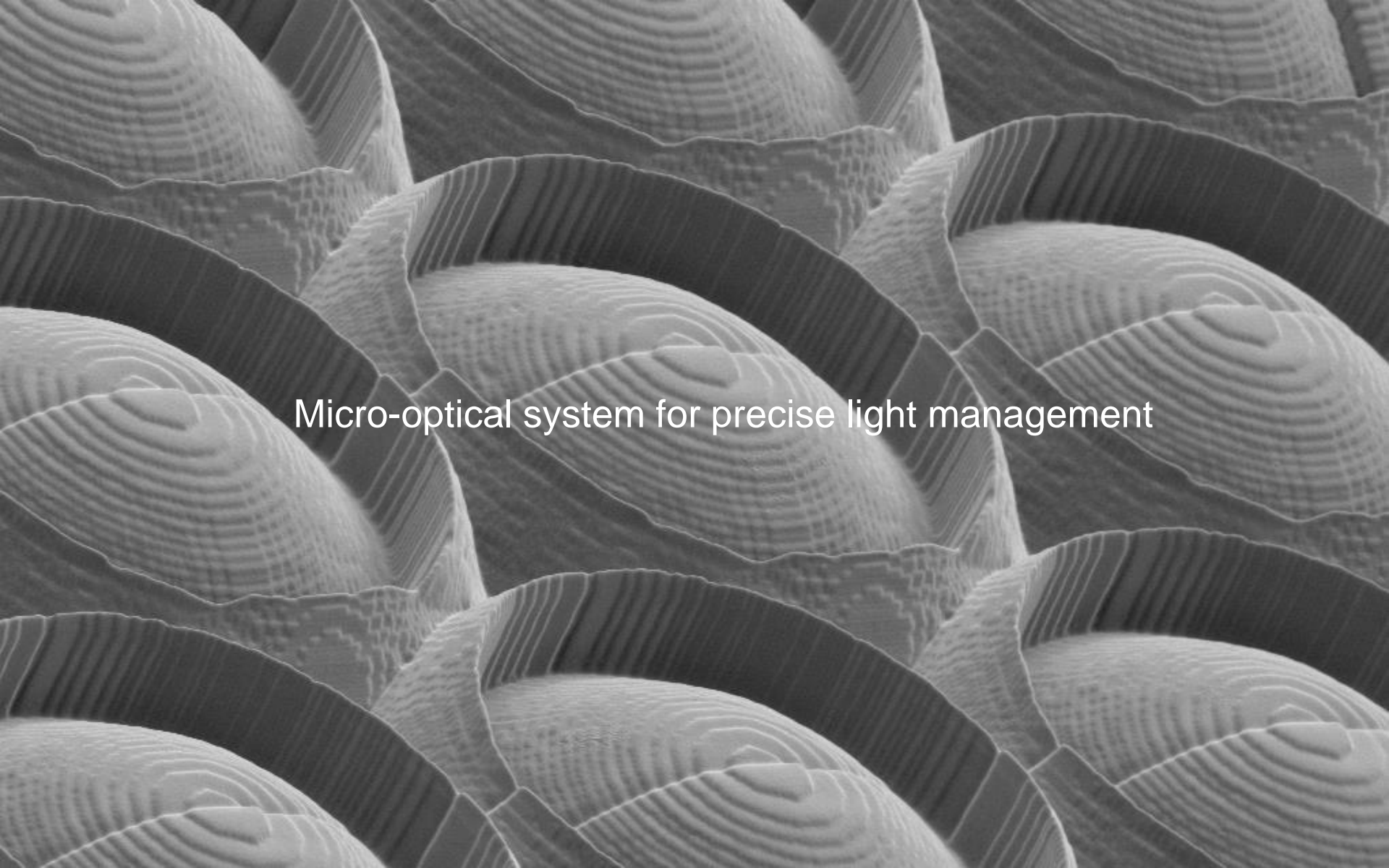
E-beam lithography, laser lithography, 3D nanoprinting, various manufacturing technologies.



Scanning electron micrograph (SEM) showing a dense array of smart microneedles. Each microneedle is a conical structure with a sharp tip and a central channel. The needles are arranged in a regular, grid-like pattern. The background is a dark, textured surface.

Smart microneedle system for the long-acting drug delivery

50 μm



Micro-optical system for precise light management



IQ
STRUCTURES

Optical protection against counterfeiting

Creative combination of cutting-edge technologies

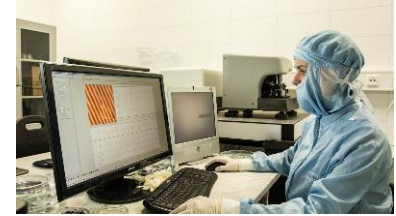
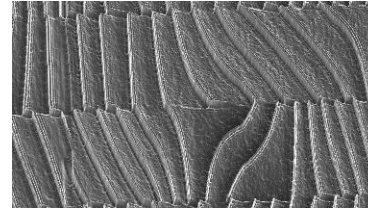
Unique set of technologies allows us to create sophisticated nanostructures with extraordinary optical properties.

e-beam
lithography

UV
lithography

ion
etching

3D nano-
printing



**Innovative optical features and extra safe
security elements.**

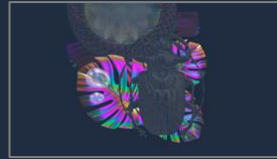




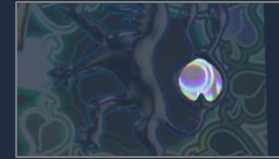
Effects Gallery



White 3D Bas-relief effect



Rainbow 3D Bas-relief effect



Keyhole effect



Moving effect



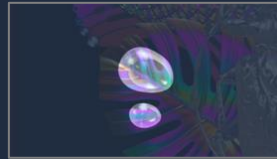
Sharp 3D effect



Real 3D effect



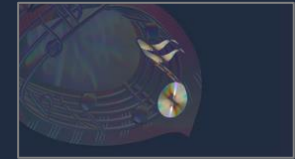
Kinetic effect



Semi-transparent White 3D Bas-relief effect



Modified Axicon effect



Lens effect

FIVE THOUSAND GOOD ONES

5000

IGM



GM IGM
A T M T G
GM GM
888888

V.L. Mead.

Bas-relief

- 3D facial bas-relief
- colourless
- visible under any conditions

→ **TOUCH DON'T FEEL**



Moving element

- T, G, M moving letters
- hovering under the plane
- colourless
- best visible in direct light

→ **TILT LEFT MOVE UP**



Keyhole element

- TGM drawing
- hovering under the plane
- colourless
- best visible in direct light

→ **HIDE AND SEEK**



Magnifysense

- TGM text
- hovering under the plane
- colourless
- best visible in direct light

→ **MAGNIFY**



AWARDS



IHMA Excellence in Holography 2019
BEST ORIGINATION
IQ Banknote Stripe

IHMA Excellence in Holography 2018
BEST ORIGINATION
A Beetle and a Flower

Government Security Awards 2019
ANTI-COUNTERFEIT PROTECTION
IQ proID

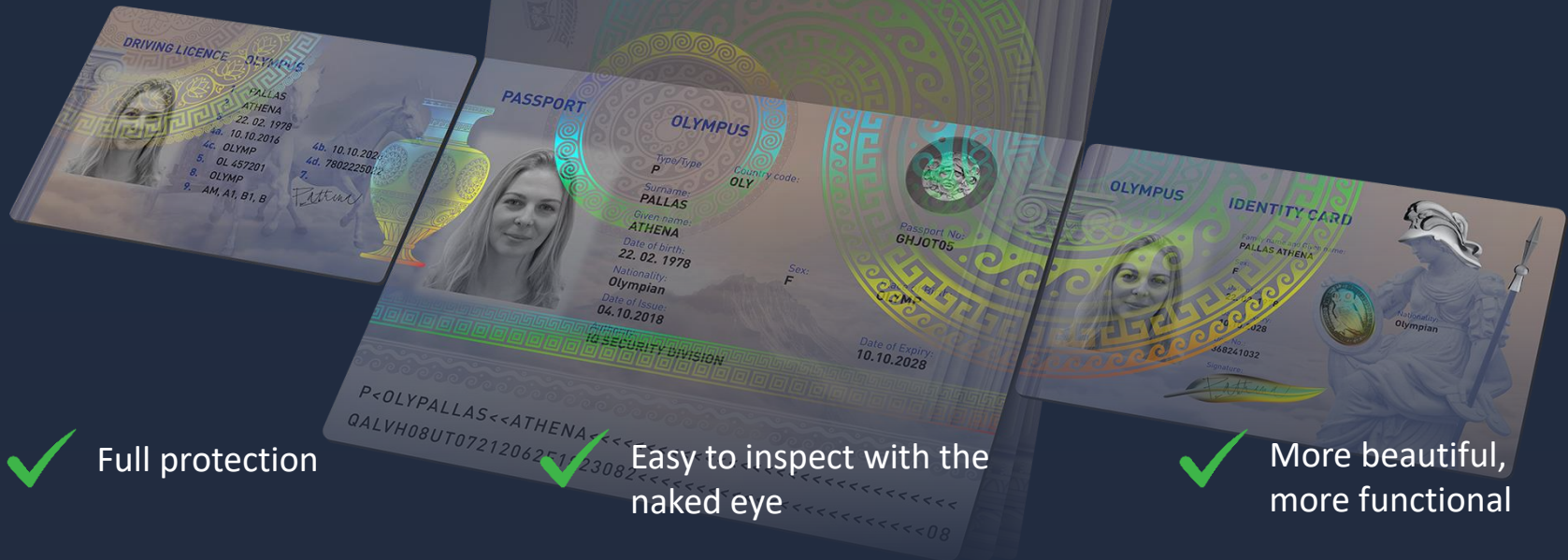
IHMA Excellence in Holography 2018
BEST APPLIED DECORATIVE PRODUCT
Armstrong and Trumpet



Innovative and cost-effective protection of your valuables

IQ pro ID

modern solution for protection of IDs and passports



Czech Republic ID (polycarbonate)



NATIONAL IDENTITY GUARD

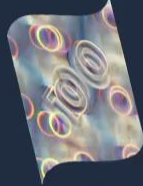
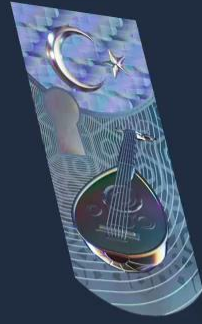


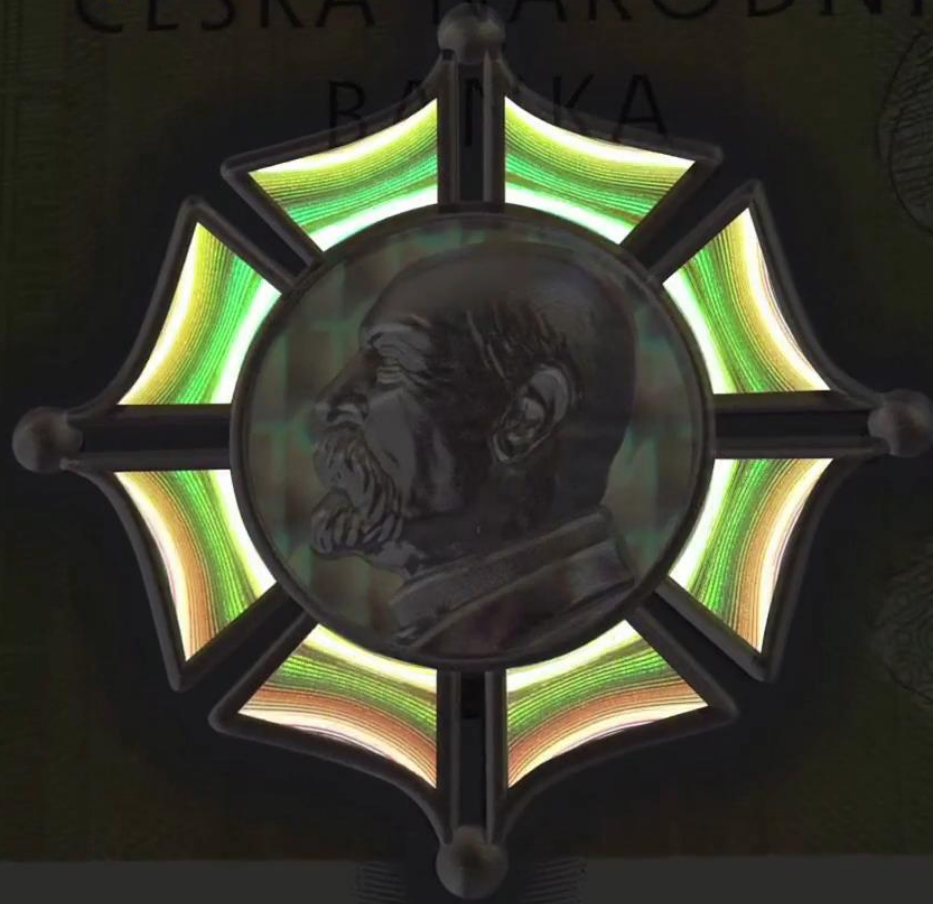
Sophisticated holograms for protection of paper and polymer banknotes

- ✓ Choose the right solution based on the banknote value
- ✓ Give superb visual effects to any type of security elements
- ✓ Increase protection using breathtaking effects



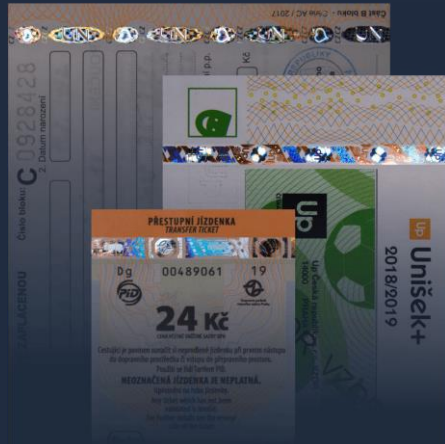






GUVERNÉR

Document, valuables and brand protection



Holographic protection of paper documents, tax stamps, certificates, vouchers, tickets etc.



Security labels for protection and authentication of goods

Document, valuables and brand protection



Holograms embossed directly into metal



Microdots: Sophisticated verification of material and product authenticity

**Security and beauty first.
Nanoengineered.**

IQ CHECK ✓

The unmistakable
smartphone
authentication of
identity documents,
banknotes and coins.

And much more.



IQ Check is a complex ecosystem



Physical identity



IQ Check mobile
application



Unmistakable
authentication

IQ CHECK ✓

DOCUMENT AUTHENTICATION

IQ CHECK provides unmistakable authentication of a physical identity document using a smartphone. Full and Total authentication mode available (see box below).

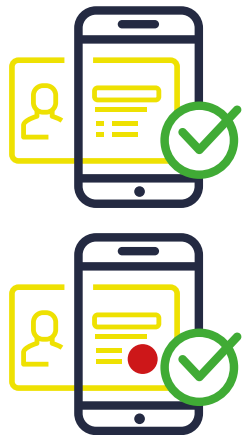
PERSONAL DATA VERIFICATION

IQ CHECK enables a smartphone to verify the holder's identity cross-matching the physical data on the ID document (OCR), electronic data from the chip (NFC) and biometric characteristics of the holder (liveness check).

DIGITAL IDENTITY CREATION

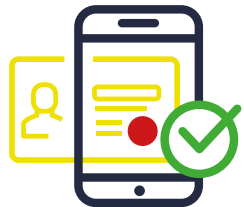
IQ CHECK allows the creation of a verified and secured digital identity from a physical identity document.

How IQ Check works



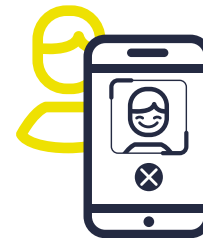
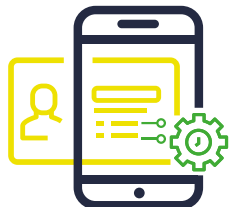
1. Verify the authenticity of the document

The customer needs to do nothing more than take a picture and the video using their phone.



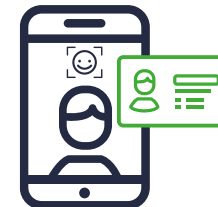
2. Verify the personal data

Physical alphanumeric and MRZ data from the document are checked using OCR techniques, electronic data are sourced from the chip using the NFC technology. Data integrity verification is processed.



3. Check the liveness

Facial recognition techniques are used for matching the holder's face with the photos stored in the document (physical and electronic).



4. Create the digital alter-ego

A verified and secured digital identity is created from the physical identity document.

IQ Structures products and solutions
have repeatedly won international awards
for excellence in holography



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

trask

Trask is a technology company operating in a global market. Founded in 1994, Trask has been designing and delivering end-to-end IT projects and solutions for business innovators, focusing on analytics, data management, digital business, application integration, and cybersecurity.



www.iqstructures.com

IQ CHECK ✓

Unambiguous smartphone
authentication of identity documents.
And much more.



Powered by **trask**

DOCUMENT AUTHENTICATION

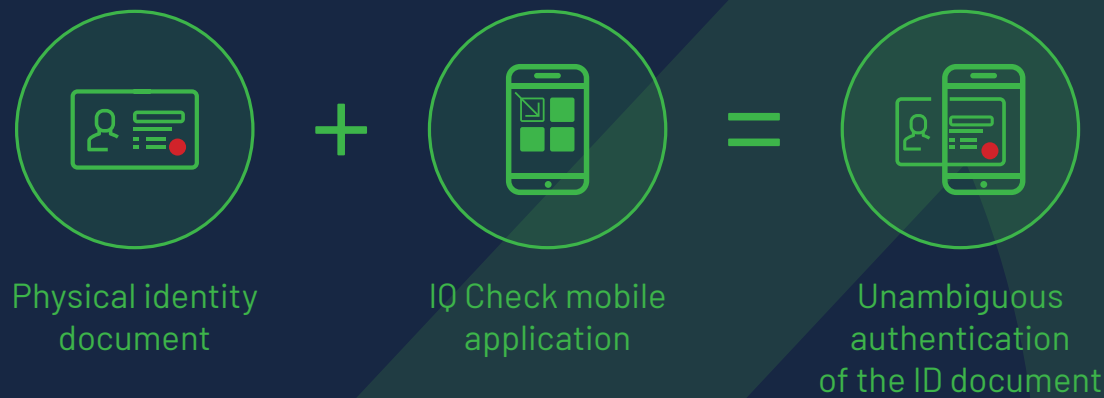
IQ CHECK provides unambiguous authentication of a physical identity document using a smartphone. Full and Total authentication mode available (see box below).

PERSONAL DATA VERIFICATION

IQ CHECK enables a smartphone to verify the holder's identity cross-matching the physical data on the ID document (OCR), electronic data from the chip (NFC) and biometric characteristics of the holder (liveness check).

DIGITAL IDENTITY CREATION

IQ CHECK allows the creation of a verified and secured digital identity from a physical identity document.



PRODUCT VERSIONS



IQ CHECK FULL

Document authentication using image analysis based on advanced machine learning algorithms. Identity documents without unique DOVID elements may be used.

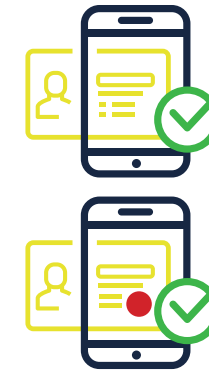


IQ CHECK TOTAL

Authentication reinforced by integration of unique **DOVID elements** in the identity document. Unique DOVID elements enable quick and easy authentication of the document using complex mathematical algorithms integrated in the mobile application. This version offers the most sophisticated protection against document forgery.

HOW IQ CHECK WORKS

A physical identity document and smartphone with the mobile application is needed. The system navigates the user through a quick and easy verification process.



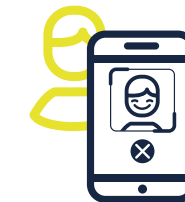
1. Verify the authenticity of the document

Authentication of the document using FULL or TOTAL authentication mode.



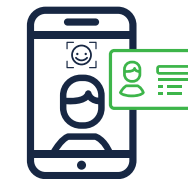
2. Verify the personal data

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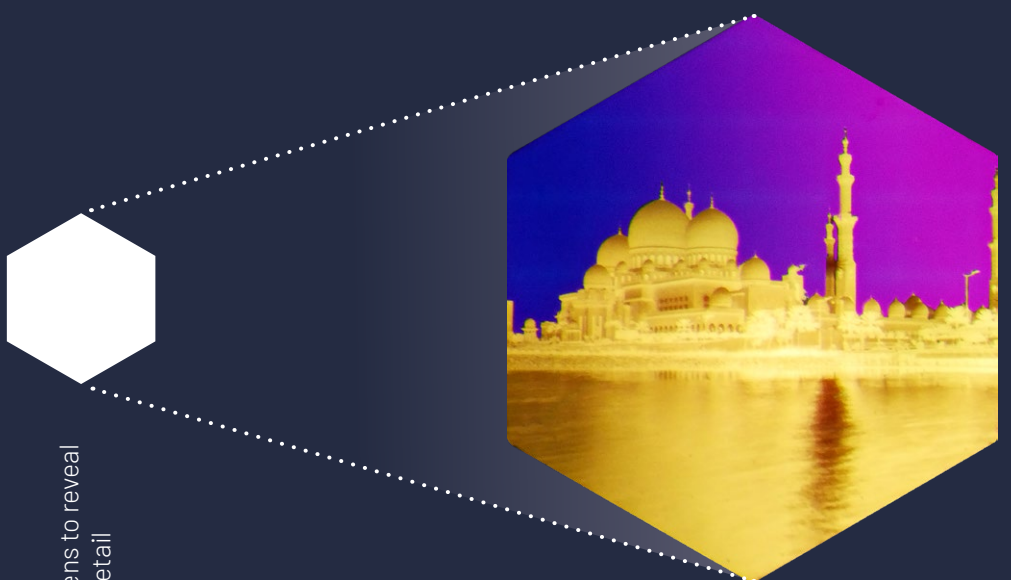
IQ CHECK USE CASES

Document type	Reasons for action	Document authentication	Personal Data verification	Liveness check	Creation of digital identity
ID card	Offline state administration services	YES	YES	NO	NO
ID card	E-government	YES	YES	YES	YES
ID card	Online business services (opening a bank account)	YES	YES	YES	NO
Driver's license	Street control	YES	YES	NO	NO
Passport	Border control	YES	YES	NO	NO

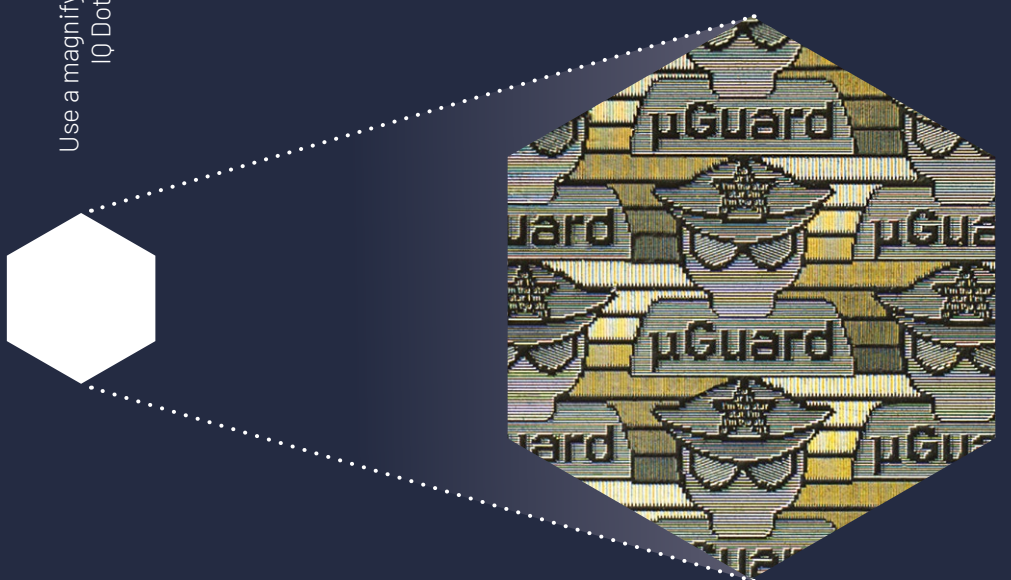


IQ Dot

Holographic
microparticles



1500 μm (3750 px)
pixel size: 400 nanometers



100 μm

IQ Dot

IQ Dot is a small nickel platelet with sophisticated protective holographic effects at a typical size of 100-1500 micrometers and a specific shape (squares, hexagons etc.).

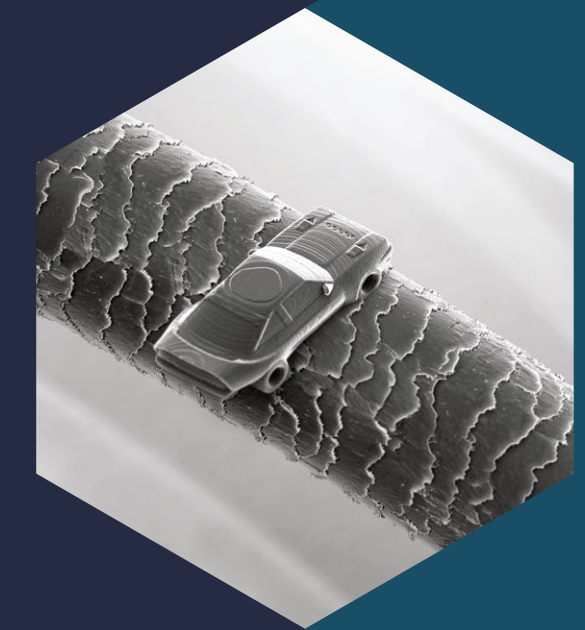
It can be detected using a mobile phone or magnifying device. For a detailed description of the detection process see page 5.

Add an extra level of security with IQ Dot

High-end security solution for protection of IDs, passports, documents, and goods against counterfeiting. Small nickel platelets using sophisticated holographic protection providing the highest resistance against counterfeiting and fraud. Frequently used in paper documents – tax stamps, vouchers, certificates.

Technologically unique

IQ Dot is a small nickel platelet at a typical size of 100-1,500 micrometers and a specific shape (squares, hexagons, etc.). It has a holographic surface and is engraved with alphanumeric characters. Getting holographic visual effects on such a small area requires advanced methods of electron beam lithography. IQ Structures devoted years of development to this extraordinary solution, which only an organization that deals with engineered nanostructures is capable of.



Easy application anywhere



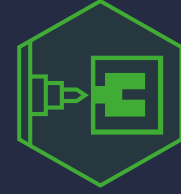
Manual application

National heritage inventory
(painting, sculptures, pottery etc.)
Valuable personal items, cars, motorcycles,
bikes, industrial machines etc.



Industrial spraying

Spare parts, industrial system complexes,
manufacturing lines



Injection molding

(molding machines, integration in granulate)
High-value injection-molded products



Polymer extrusion

(integration in granulate)
High-value polymer films



Paper production

(spraying system)
Banknotes, tax stamps



Printing

(printing inks)
Vouchers, certificates, security documents



Coating

(adhesives, protective coatings)
High-end packaging, high value coated items

Detection

Perfectly resistant to fraud

IQ Dot enables several levels of control. A standard naked-eye inspection checks for Dot presence. An in-depth inspection with a handheld magnifier then shows the shape and the alphanumeric characters, while a forensic inspection with a microscope reveals the entire holographic effect.



Naked-eye detection

Visual control of Dot presence
(A UV marker may be used for faster localization).



Handheld magnifier

Authentication of the Dot through checking holographic effects and alphanumeric characters with a handheld magnifier.



Forensic control

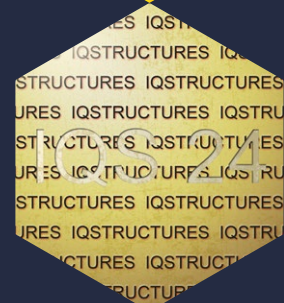
Forensic control checks the presence of specific nano graphic elements (using an SEM, AFM microscope) providing 100% evidence of originality.

Amazing effects

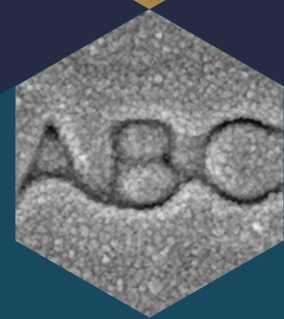
IQ Structures has a range of effects in its holographic portfolio suitable for small-area application. Even a micro hologram can be interesting and inimitable. Some of this has been applied to our award-winning, regular-sized holograms. This is possible thanks to IQ Structures' unique technology – optical nanostructures are created using mathematical algorithms that cannot be derived from the finished hologram (thus enhancing security).



Bas-relief



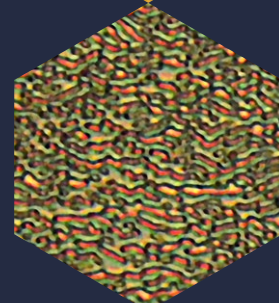
Micrographic text
(letter height from 50 microns)



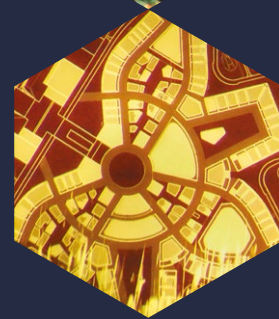
Nanographic text
(letter height from 140 nanometers)



Kinetic effect



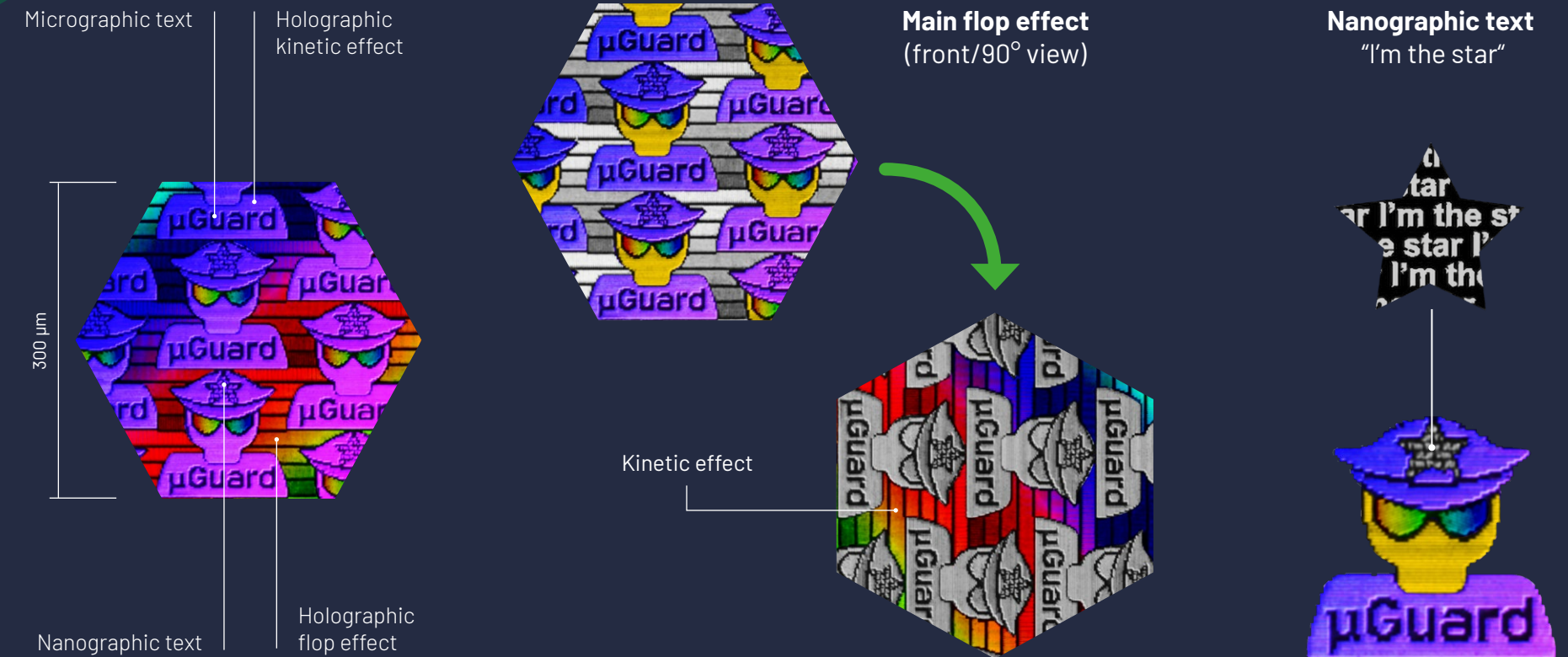
Laser-readable image



Micrographic features
(lines from 10 microns)

Example of a holographic design

Description of basic effects



We can prepare a tailor-made design for you.



Contact: Daniel Nahodil

e-mail: daniel.nahodil@iqstructures.cz, tel.: +420 770 132 367

www.iqsgroup.cz

www.iqstructures.com