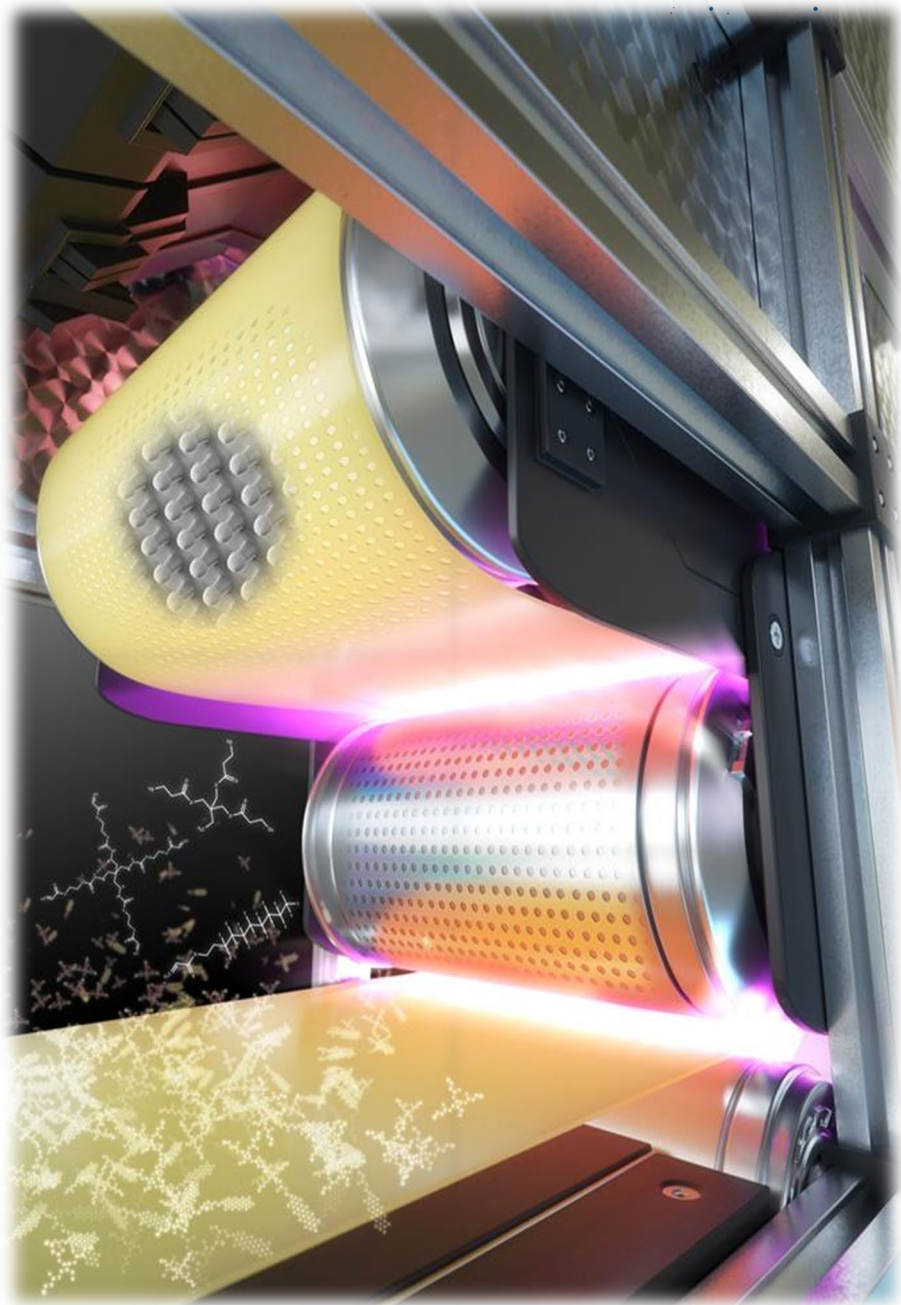


ZUKUNFTSTAG

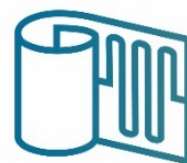
INNOVATIONS- UND WIRTSCHAFTSREGION SÜD

#bettertogether





Effizienz und Innovation- Europäische Pilotlinien für die Fertigung der Zukunft



NextGen
Microfluidics

MedPhab
Photonic Medical Devices

Phabulops

Paul Hartmann

Graz, 09.10.2024

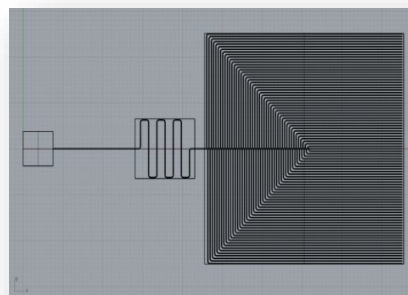
Basis: Rolle-zu-Rolle-UV-Nano imprint lithographie

MATERIAL



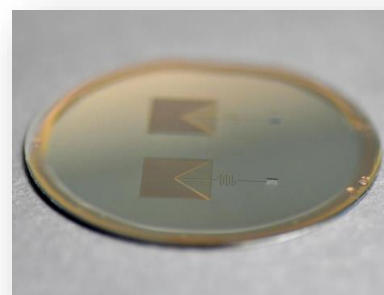
z.B. Poly-
Urethane-
Acrylates

SIMULATION & DESIGN



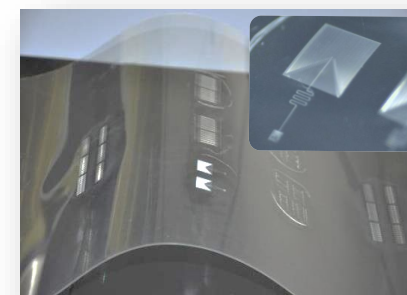
z.B. COMSOL,
Ray Tracing,
Wellenoptik
Freifrom

MASTER



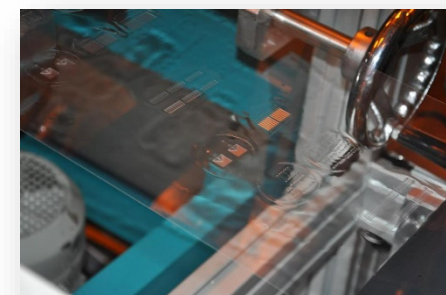
z.B. Maskenlose
Graustufen-
Lithographie

STEMPEL / SHIM

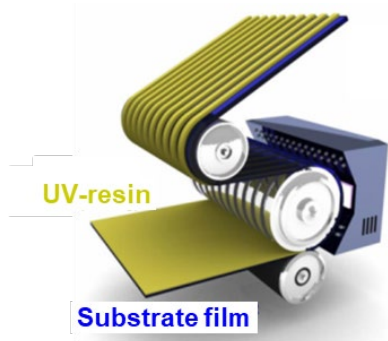
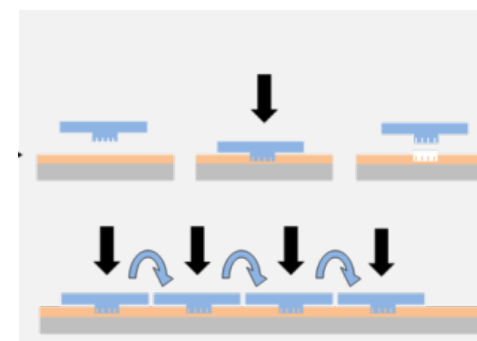
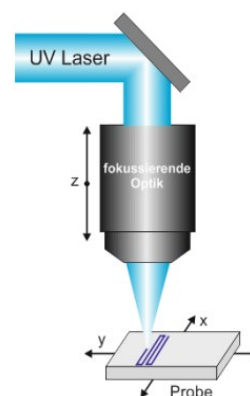


Step & Repeat UV-NIL

PRODUKTION



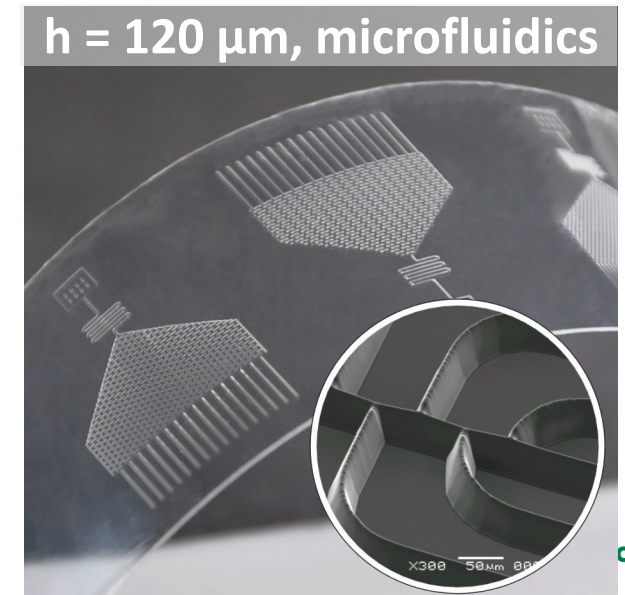
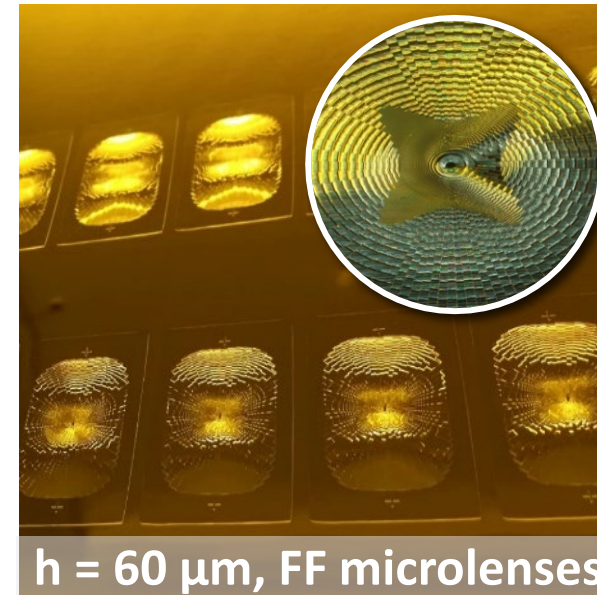
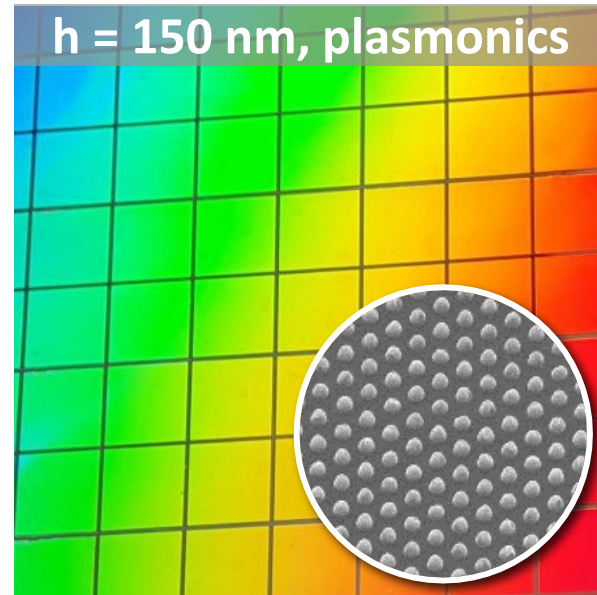
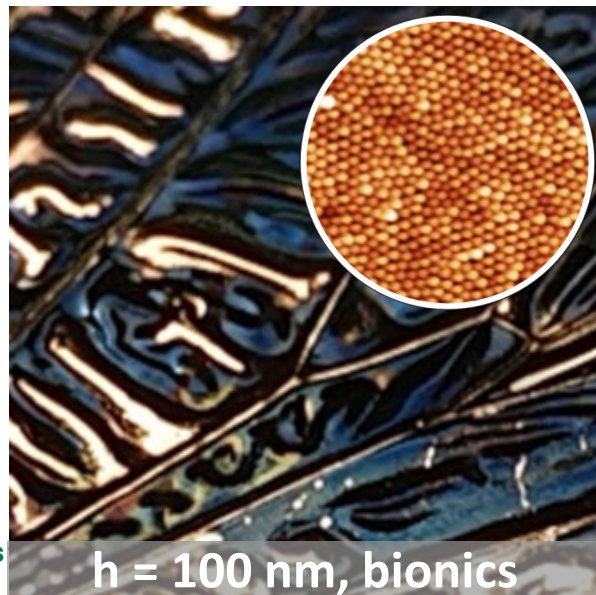
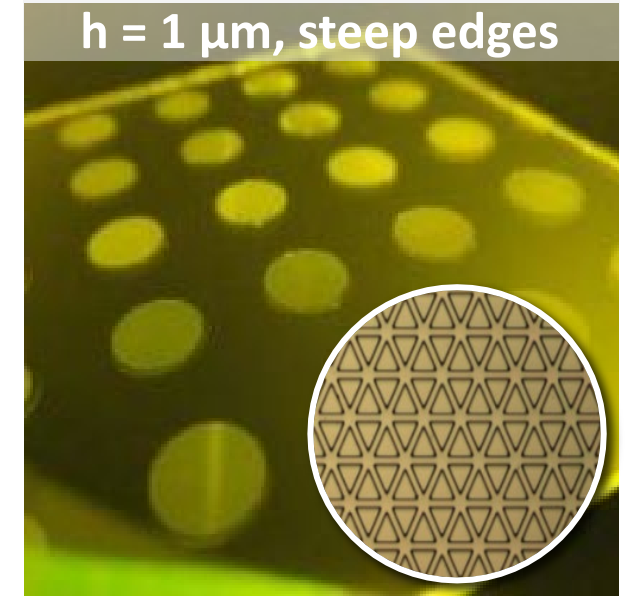
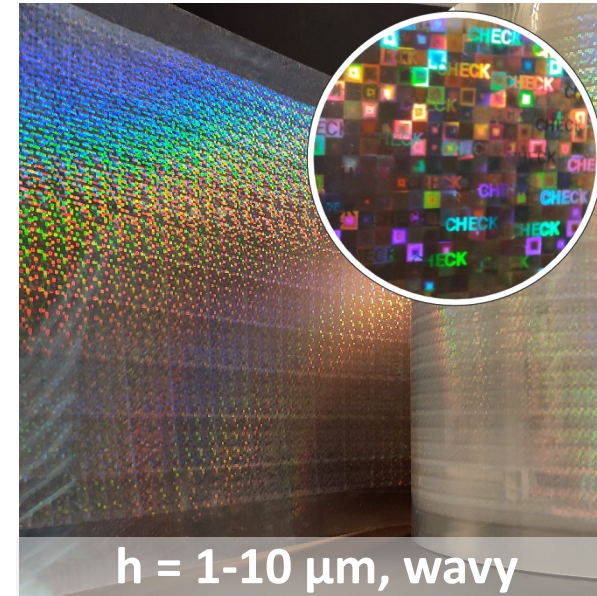
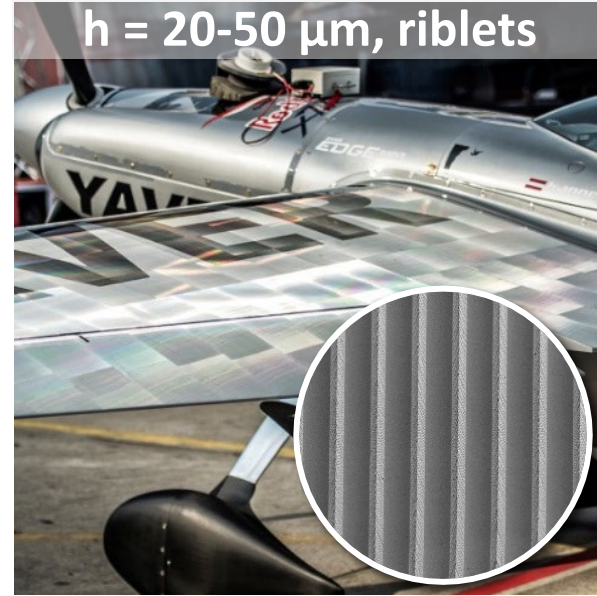
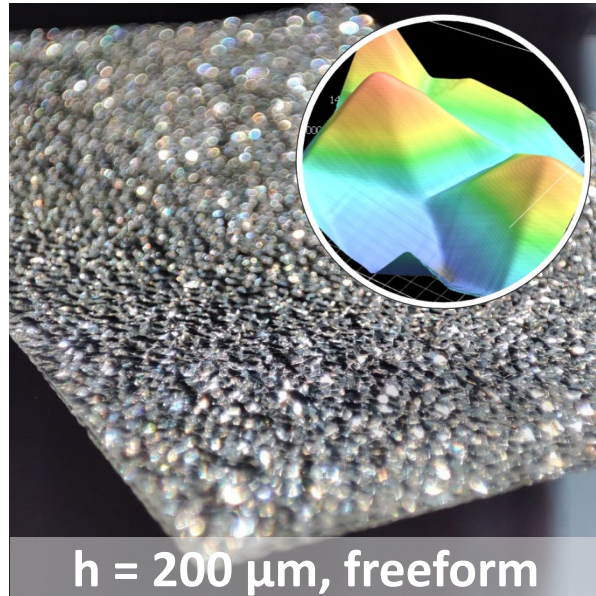
R2R-UV-NIL



<https://youtu.be/FbYQ0KiWr4k>

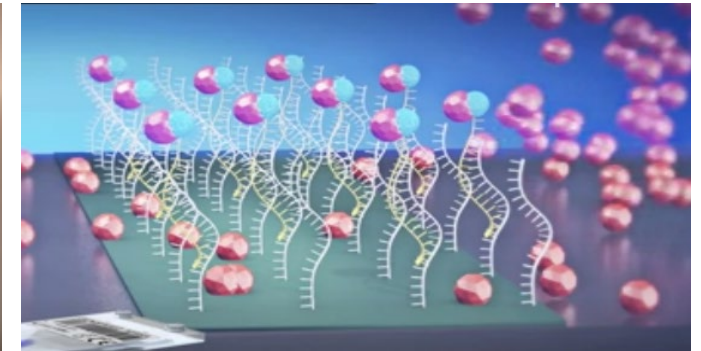
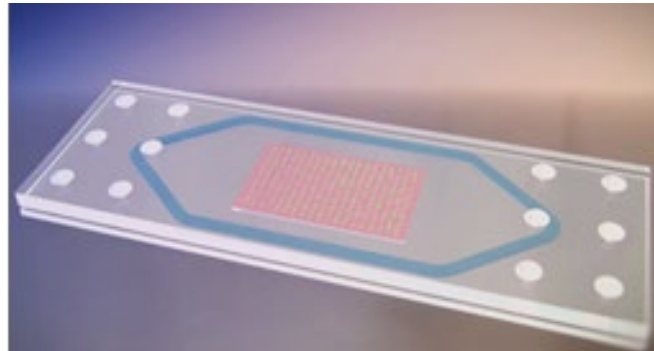
UPSCALING

Anwendungsbeispiele, realisiert für Industriepartner

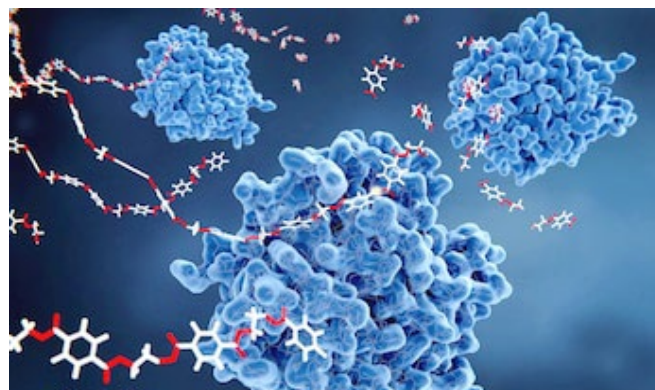
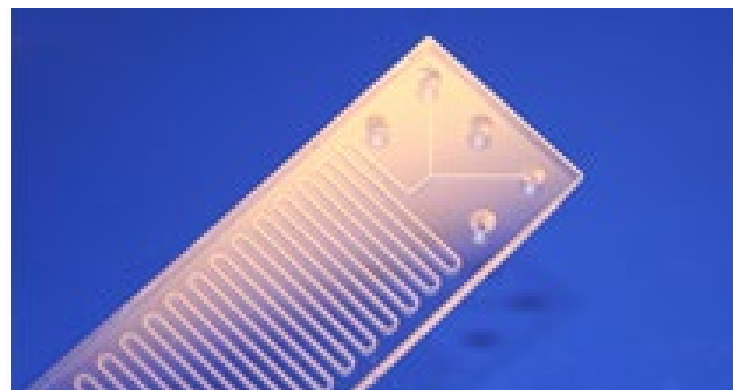


OITB NextGen μ -fluidics

- Open Innovation Test Bed für die nächste Generation von Produktionstechnologien für mikrofluidische Komponenten basierend auf nano-strukturierten Oberflächen und Membranen
- Koordination durch JR-MATERIALS
 - Anja Haase, Martin Smolka



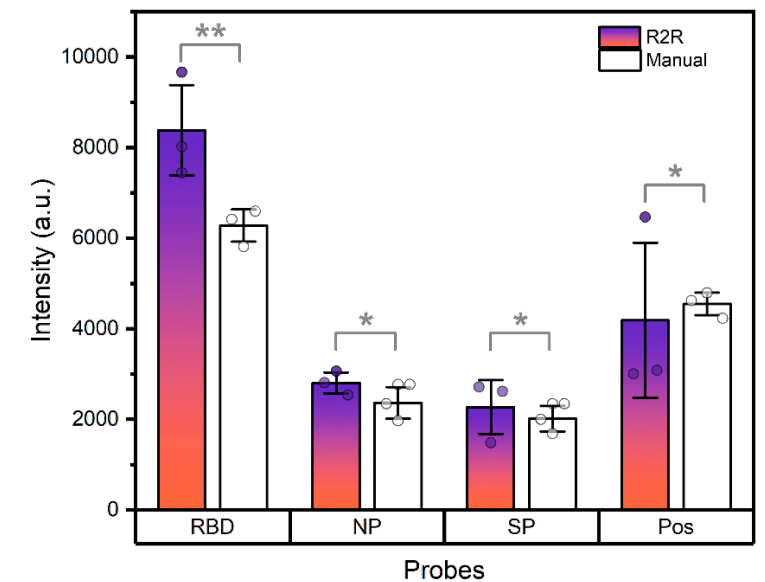
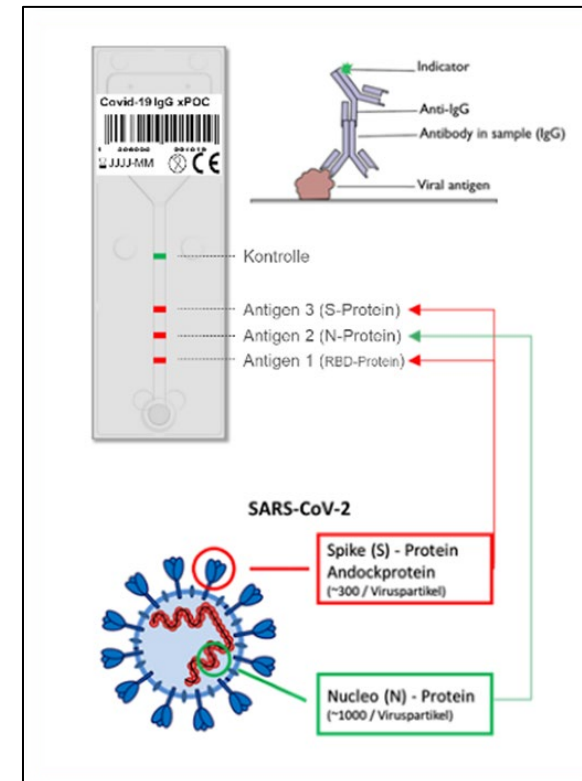
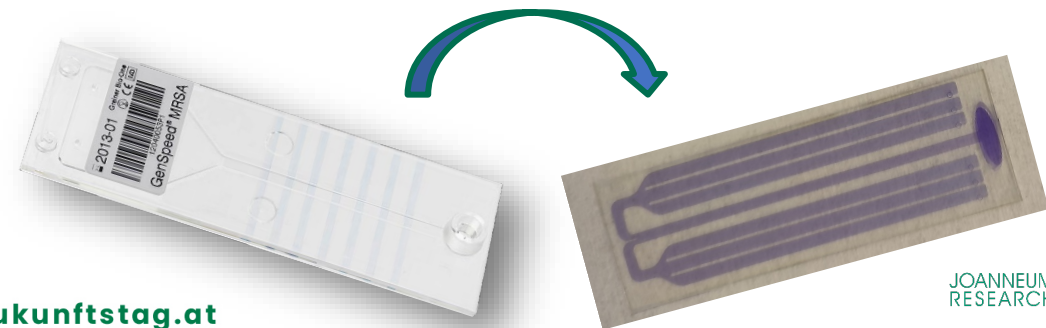
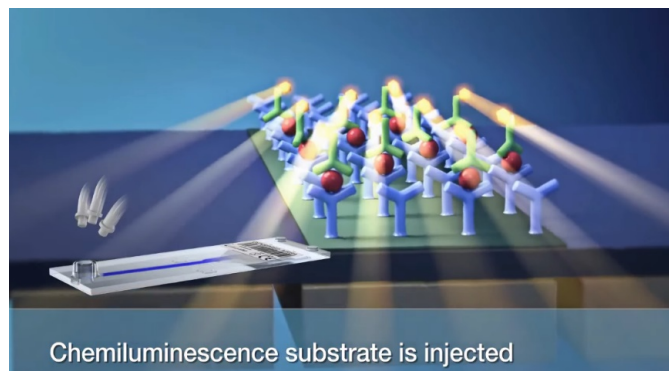
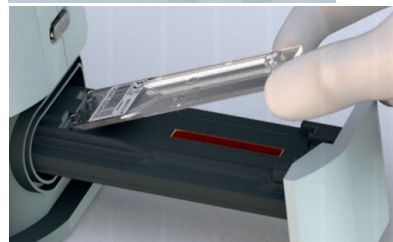
Design & Simulation 	Process development  	Cell culture solutions  
Materials  	 	Research  
Electronics manufacturer 	Microfluidics development & manufacturing  	 
Bioprocess 	Medical sensors  	 



In-vitro-Diagnostik Chips für Protein- und DNA-Detektion

- R2R-gedruckter kapillargetriebener IVD-chip mit schneller Chemilumineszenz

- Quantitativer COVID-19 Antikörpertest



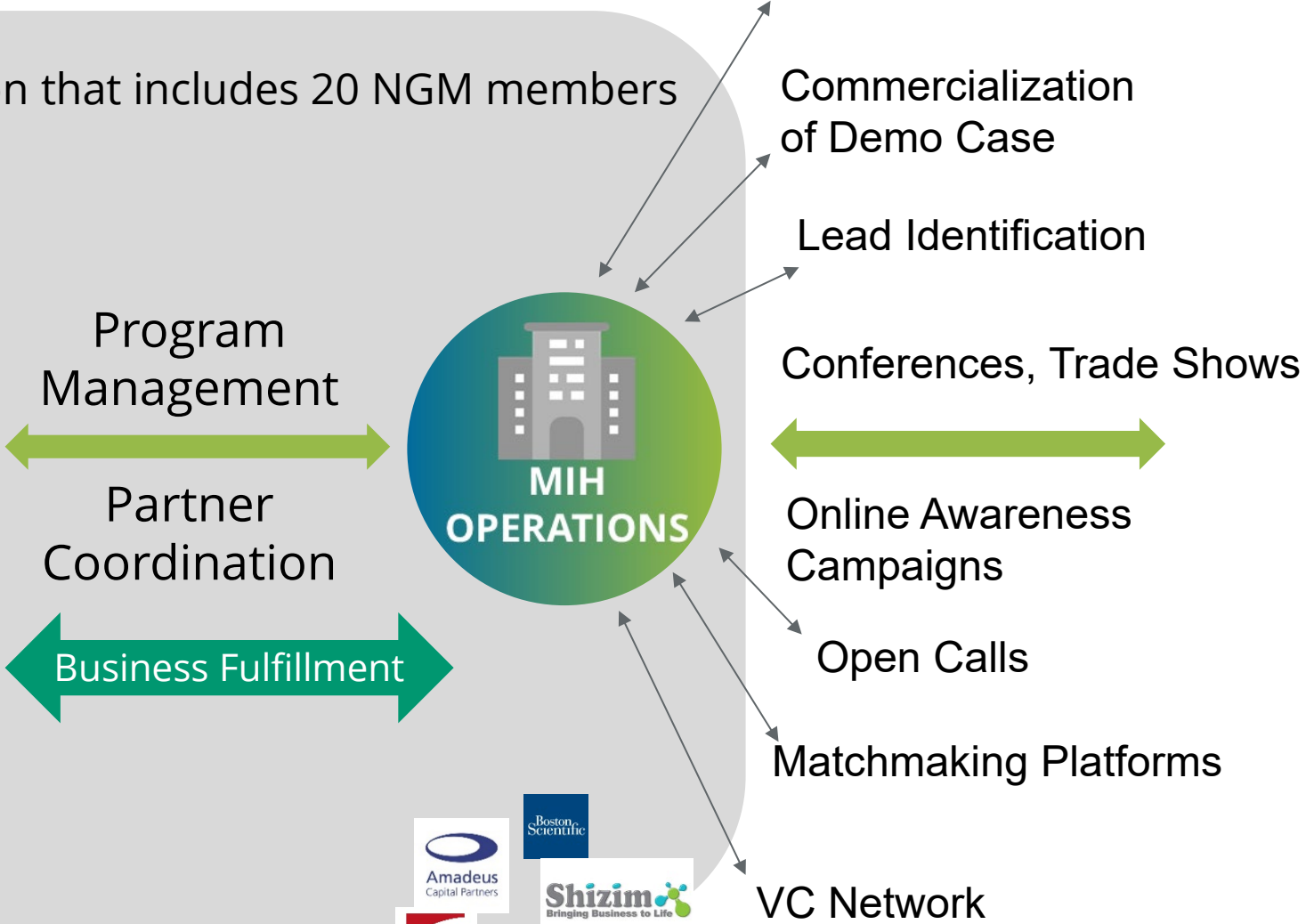
MIH – Single Entry Point to NGM Services

H2020 Partners (e.g. PhotonHub)

MIH is a non-profit association that includes 20 NGM members

Research
Development
Production

Design & Simulation BIONIC SERVICE TECHNOLOGIES	Process development scienion INMOLD	Cell culture solutions Ybidi Innoprot
Materials condensia micro resistor technology	Microfluidics development & manufacturing temicon	Research tecnalia
Electronics manufacturer Infineon	Medical sensors bi.FLOW micronit	BRFAA TU Graz
Bioprocess Qimac	Medical sensors Erba	BNN JOANNEUM RESEARCH



MARKETS

USE CASES

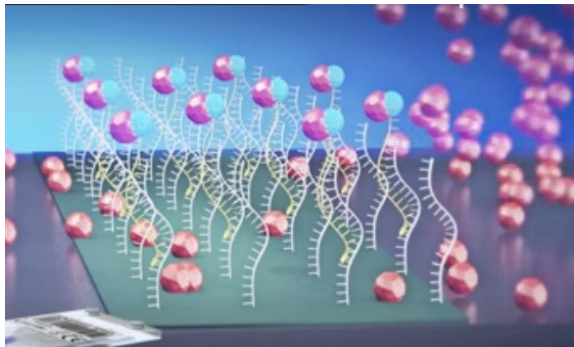
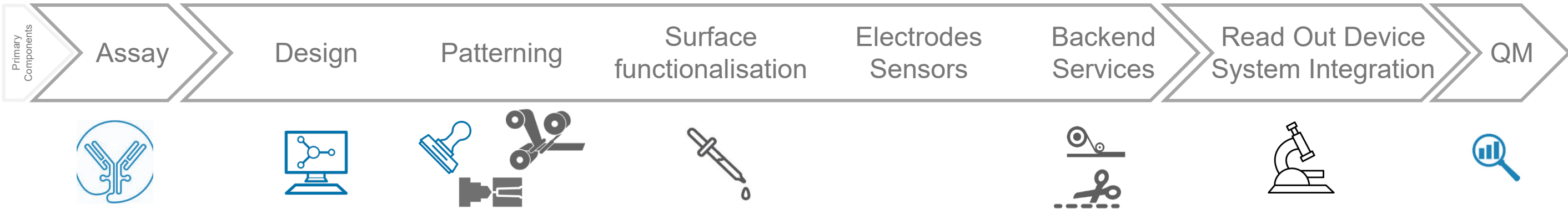
CUSTOMERS

EXTERNAL PARTNERS

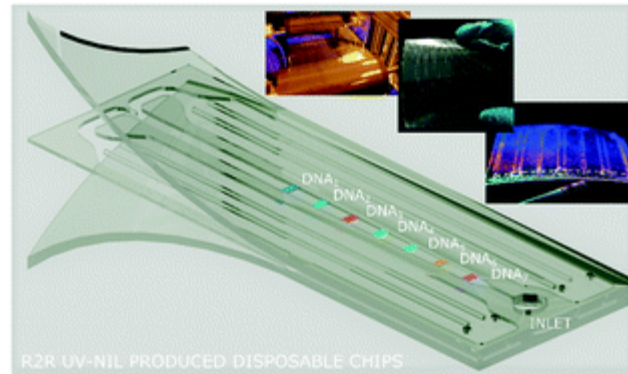




MIH – Wir entwickeln kundenspezifische lab-on-a-foil Systeme



- IVD - ELISA, LAMP, PCR
- ENZYME Detection
- CELL analysis
- Water, Food analysis



- Active & Passive Microfluidics
- From Milling over Inj. Mold to Roll-to-Roll
- From Prototypes to Millions of Units

Microfluidic
Chip



- Device Development
- Technology Platforms
- Complete System Integration

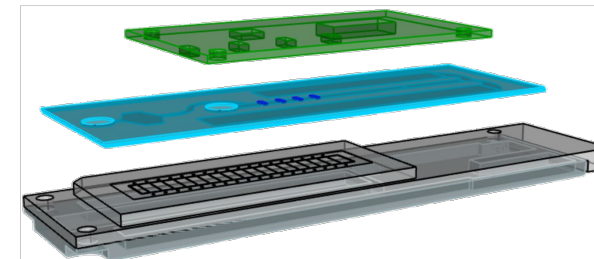
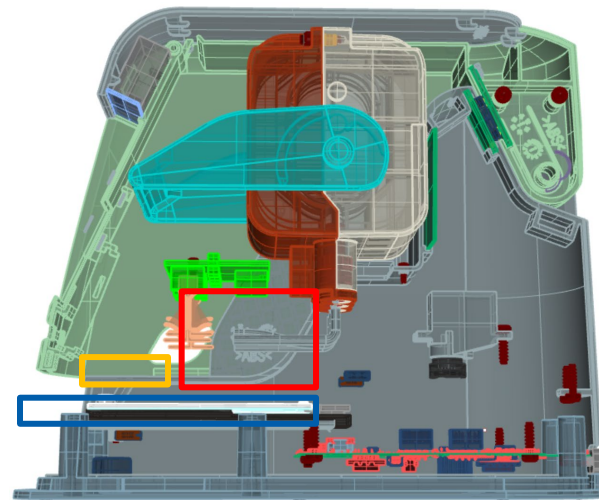
Microfluidic
Solution

Pilotlinie MedPhab

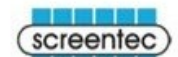
- Europas erste Pilotlinie für die Herstellung, Prüfung, Validierung und Skalierung neuer photonischer Technologien für die medizinische Diagnostik, die eine schnellere Produkteinführung bei geringeren FuE-Kosten ermöglicht

- Technologien

- Integrierte Optik
- Advanced Packaging
- Faseroptik
- Mikrofluidik
- Auslesegeräte

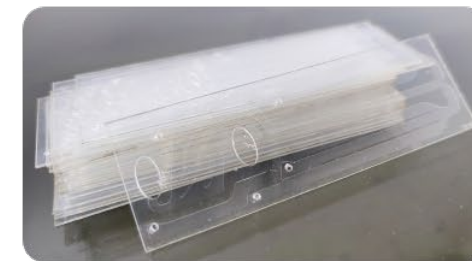
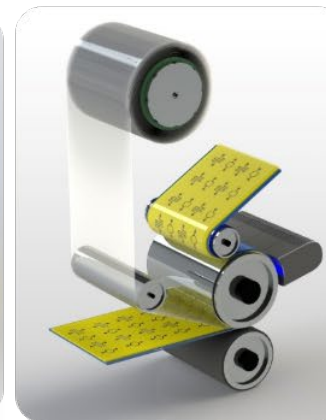
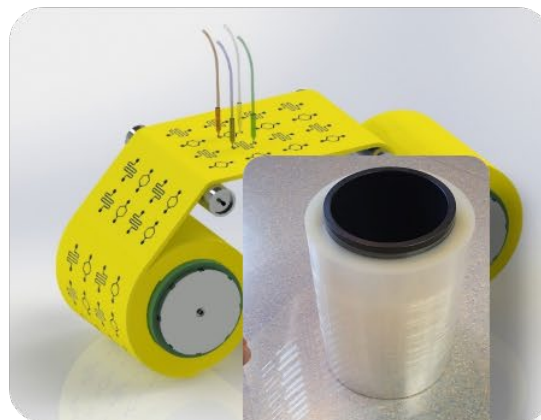
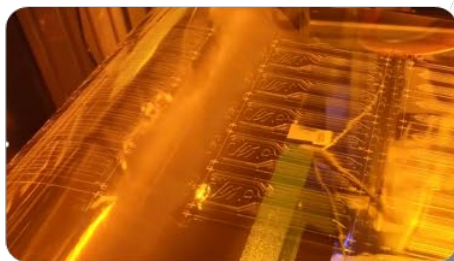
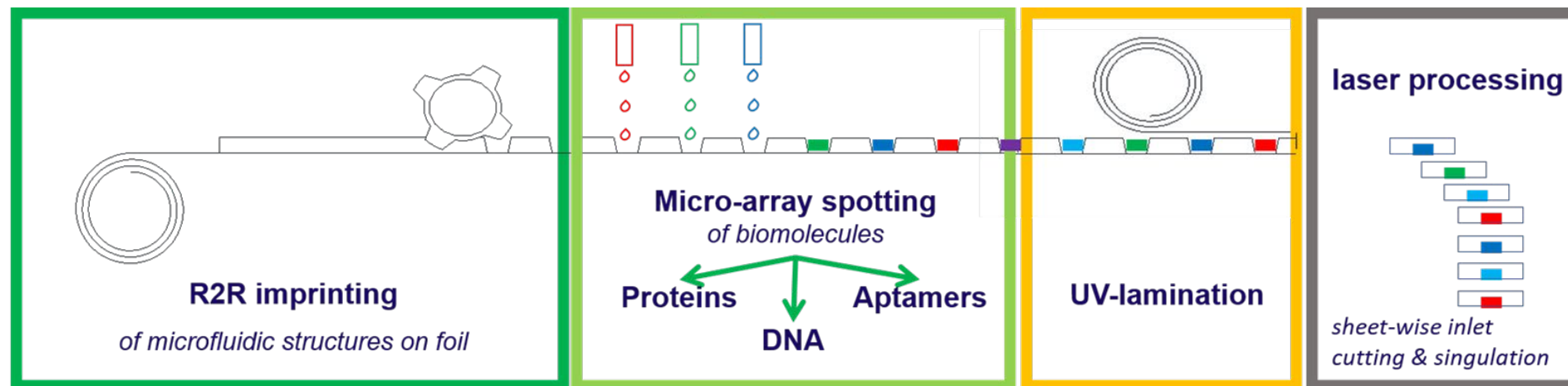


OUR PARTNERS



Highlights des MedPhab-Projektes

- Lab-on-Foil-Chips durchgängig aus Rolle-zu-Rolle-Fertigung



MedPhab Market Place

- R&D und Service-Portfolio von den Partnerorganisationen und anderer Unternehmen wird in der gesamten Wertschöpfungstiefe abgebildet
- 20 Organisationen
- 137 Services
 - R&D
 - Proptotyping
 - Manufacturing
 - Scale-Up

Listed items: 25 Sort by: AZ - Offering Title Items/page: 25 Show as: Grid

POLYMER COATINGS ON RIGID/FLEX SUBSTRATE	POLYMER PHOTONICS STRUCTURES	PRINTED ELECTRODES FOR NEURO-STIMULATION	PROTOTYPING OPTICAL INSTRUMENTS	R2R COMPONENT ASSEMBLY	R2R COMPONENT ASSEMBLY LINE	R2R CONVERTING OF MICROFLUIDIC DEVICES	
R2R LIQUID PHASE DEPOSITION	R2R UV-NIL MICROFLUIDICS STRUCTURING	R2R UV-NIL MICROOPTICS STRUCTURING	R2R-BIOFUNCTIONALIZATION/MICROSPOTTING	RAPID PROTOTYPING	RELIABLE HERMETIC CERAMIC MICRO-PACKAGES	REPLICATED DIE-LEVEL POLYMER MICROLENSSES	
REPLICATED POLYMER MICROLENSSES ON WAFER	RESEARCH SERVICES	ROLL-TO-ROLL PRINTED ELECTRONICS	SCREEN PRINTING FOR MINIATURIZED SENSING	SCREEN-PRINTED STRETCHABLE SENSORS	SHEARTEST TO EVALUATE WIREBONDS/BONDING	SLA 3D PRINTING	
SMALL SERIES HYBRID INTEGRATION	SMT LINE	SPUTTERING	TESTING OFFER				

« 1 2 3 4 5 6 »

Pilotline Phabulous

- Europäische Pilotlinie für die Herstellung von mikrooptischen Freiform-Komponenten durch
- UV-Replikationstechnologien
 - Wafer-Scale
 - Rolle-zu-Platte R2P und
 - Rolle-zu-Rolle R2R
- mit einem klaren Fahrplan für die Großserienproduktion zu wettbewerbsfähigen Kosten.

Partner



Typische Use Cases



Virtual Reality (VR)



Augmented Reality (AR)



Transportation Lighting



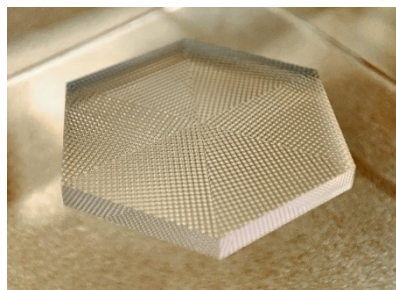
Solid State Lighting



Automotive Functional Lighting



Luxury



Use Case: Dekorative Folien

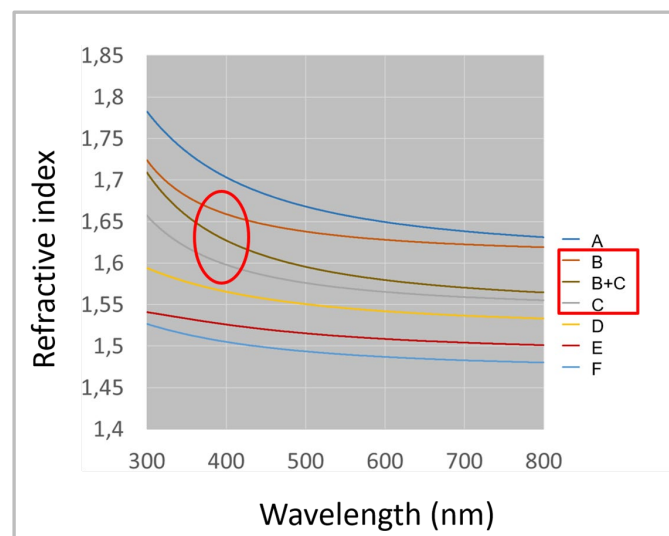
Anwendung:

Freiform Mikro-Facetten für spezielle Brechungseffekte im Luxussegment

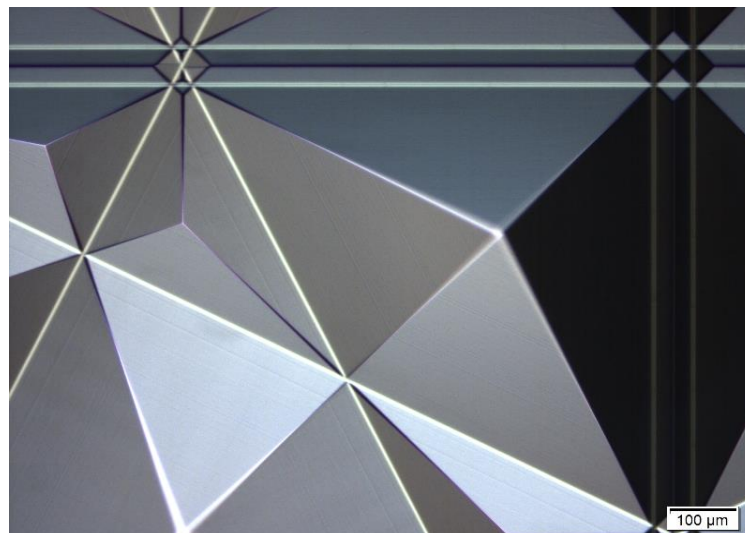
Skalierung: Nahtlose Step&Repeat-Replikation für strukturierte Shims in der Rolle-zu-Rolle UV-NIL-Produktion

Nahtloses Prägen von verteilten Facetten mit extrem hoher Kantenqualität, niedriger Schrumpfung, und passenden optischen Eigenschaften

Photopolymer mit hoher Dispersion



„Kristalle“ mit Facetten-Design



Beidseitig geprägte „Kristalle“ auf Folie



Rolle-zu-Rolle Replikation: finale Produkte

R2R UV Prägen in hochbrechende Lacke + R2R Rückseitenmetallisierung

video



Reflexionsansicht

Transmissionsansicht

Danke an

Anja Haase
Ursula Palfinger
Martin Tscherner
Jan Hesse



Danke für Ihre Aufmerksamkeit!



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Ehrenpräsident der IV Burgenland