
INNOLITE
TAILORED MOLDS AND OPTICS
Driving productivity in
ultra precision technology.
Ultra-Precision Machine Tools
for Next Level Optics Production
Rainer Klar

Company History

- 2009
  Diamond machining services
  Tool design
- 2010
  Ultrasonic
  Tooling of steel
- 2012
  Ultra precision machine tools
  Center turning
- 2016
  ILCAM
  Software development
- 2018
  DirectDrive3D
  Control architecture
- 2019
  Laser assisted tooling

Headquarters, Aachen Germany

ARBURG
Strategic cooperation
since 2009

KERN
Strategic cooperation
since 2018

INNOLITE
TAILORED MOLDS AND OPTICS

Facts | Figures

Headquarters

- Aachen, Germany
- New facilities in 2020
- 1,700 m² shop floor
- 600 m² office

Innolite

Ultra Precision Shanghai

- Shanghai, China
- New facilities in 2020
- 80 m² office

Sales

- Germany
- Benelux
- Southern Europe
- China
- South Korea
- Taiwan
- Japan
- Israel
- USA

Achievements

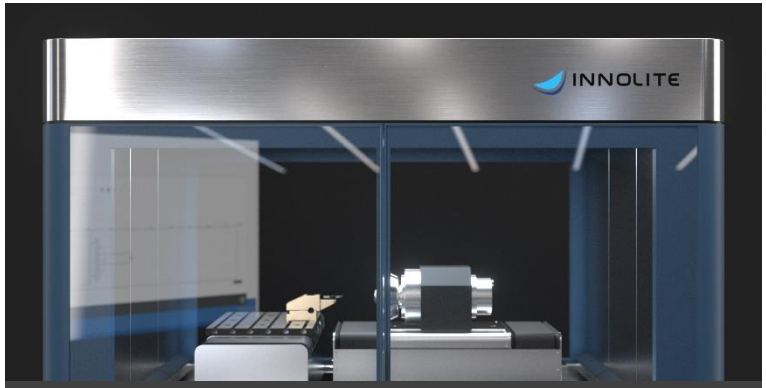
- 50 Employees
- 70 Machines installed
- > 15 years in mold making

Business Fields

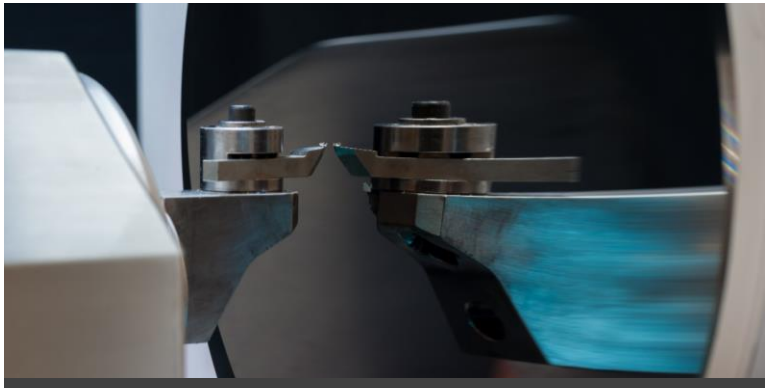
- Tailored Molds & Optics
- Ultra Precision Machines

INNOLITE
TAILORED MOLDS AND OPTICS

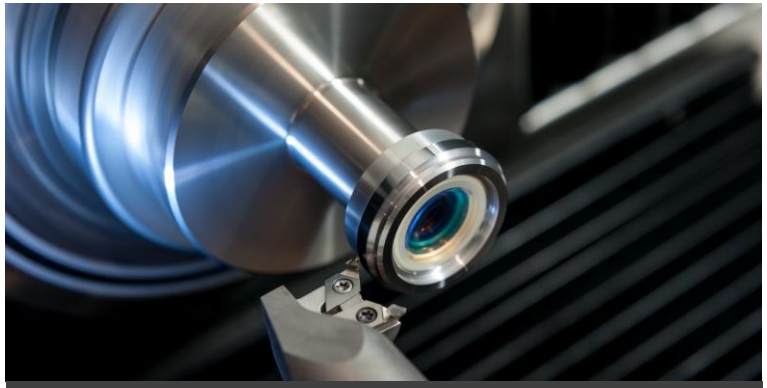
Innolite | Fields of Work



Ultra Precision Machine Tools



Tailored Molds & Optics

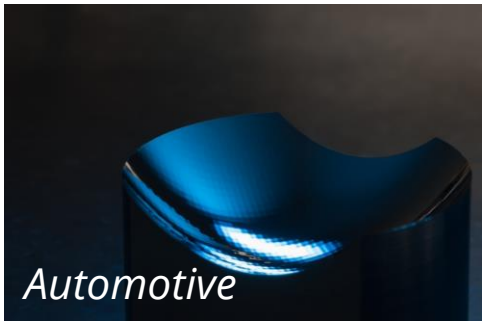


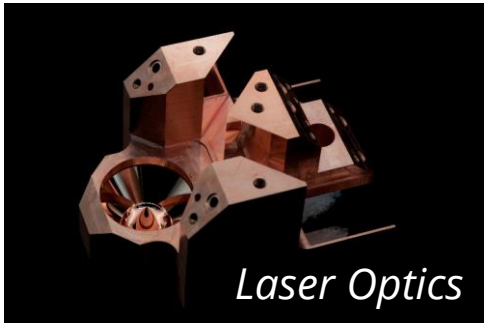
Center Turning

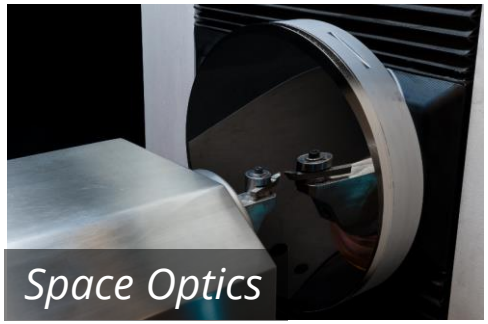
Ultra Sonic Machining

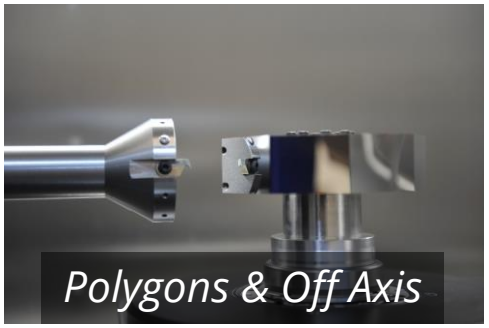
INNOLITE
TAILORED MOLDS AND OPTICS

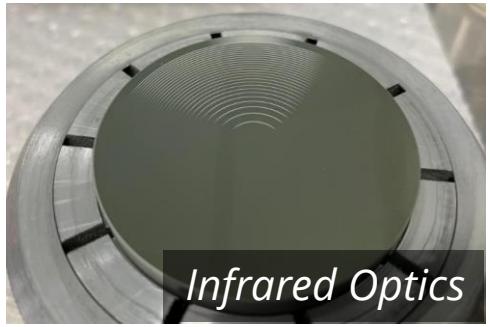
Tailored Molds & Optics | All About Experience

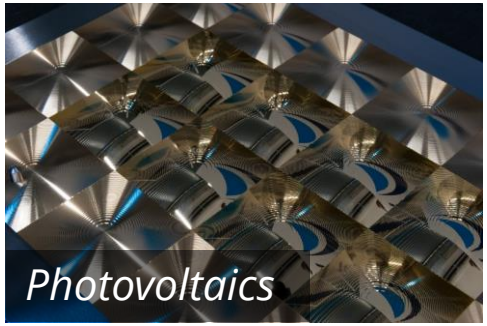


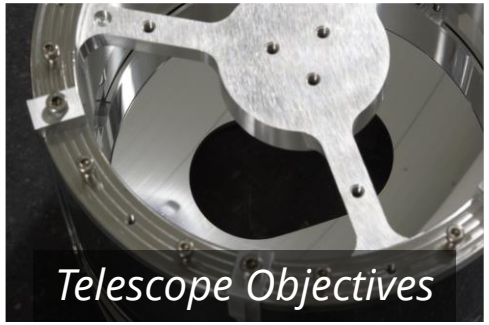


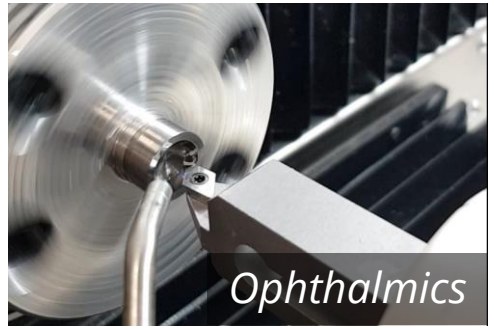












INNOLITE
TAILORED MOLDS AND OPTICS

Machine Platforms

IL200 | UP Lathe

dynamic. efficient. cost effective.

IL300 | UP Lathe

flexible. productive. allrounder.

IL500 | UP Lathe

large scale. process combination. automation.

IL600 | UP Machining Center

five axes. process variety. optics characterization.

INNOLITE
TAILORED MOLDS AND OPTICS

We Think Modular | To Enhance Your Value

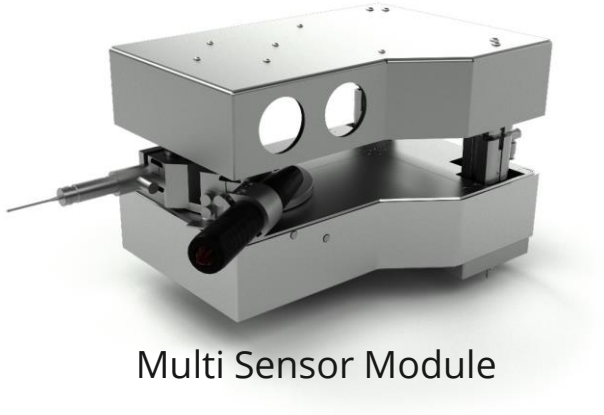
Overdrive20

Oil Hydrostatic B-Axis

Confocal Scanning

Overdrive50

Tool Setting Camera



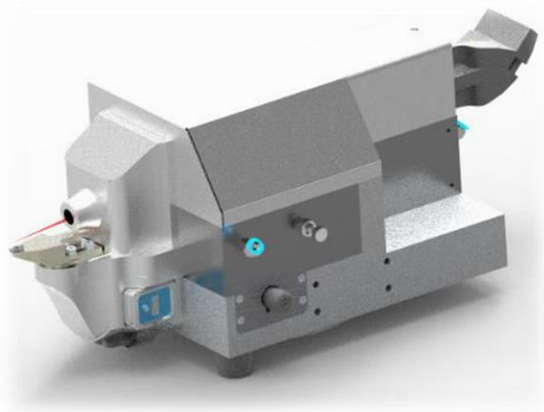
Multi Sensor Module

INNOLITE
TAILORED MOLDS AND OPTICS

Going Hybrid for the Hard Stuff | ILSonic & ILPac

ILSonic
Ultrasonic Tooling Unit

- Worlds only monolithic ultra durable ultrasonic unit
- Cutting steel to optical surface quality
- Intrusion depth up to 60 mm



ILPac
Photon Assisted Diamond Cutting

- 100 W fiber laser @ direct focus
- Cutting of tungson carbide & IR materials
- Full control system integration & safety

INNOLITE
TAILORED MOLDS AND OPTICS

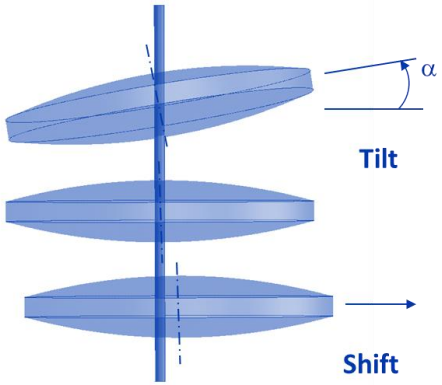
ILCENTRIC | IL300 & IL500 Platforms

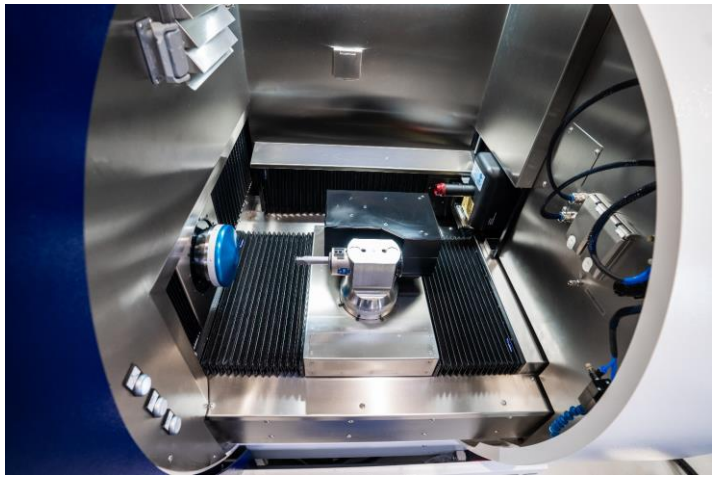
Centering of mounted lenses

Spheres, achromats, tipplets

Aspheres, freeform

IR optics





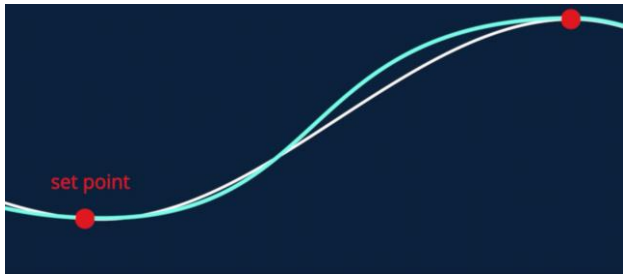
IL300 Platform

IL500 Platform

INNOLITE
TAILORED MOLDS AND OPTICS

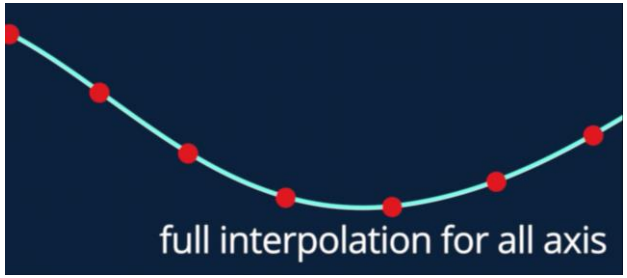
Innolite Control Architecture

DirectDrive3D |FPGA Based Set Point Handling



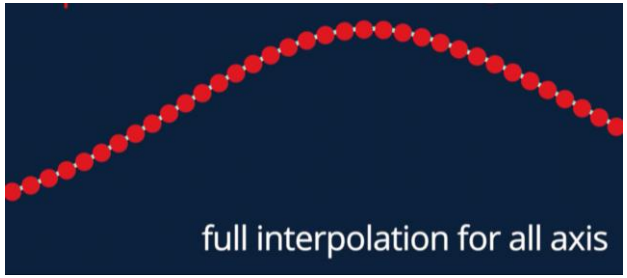
State of Art CNC Control | < 3 kHz

- Limitation due to online axis interpolation
- Fast Tool axis in slave mode at up to 35 kHz
- Programming resolution vs. # of set points



Innolite DirectDrive3D | 10 kHz

- Offline axis interpolation, equi temporal
- FPGA based control loop
- 5x more surface information vs. State of Art



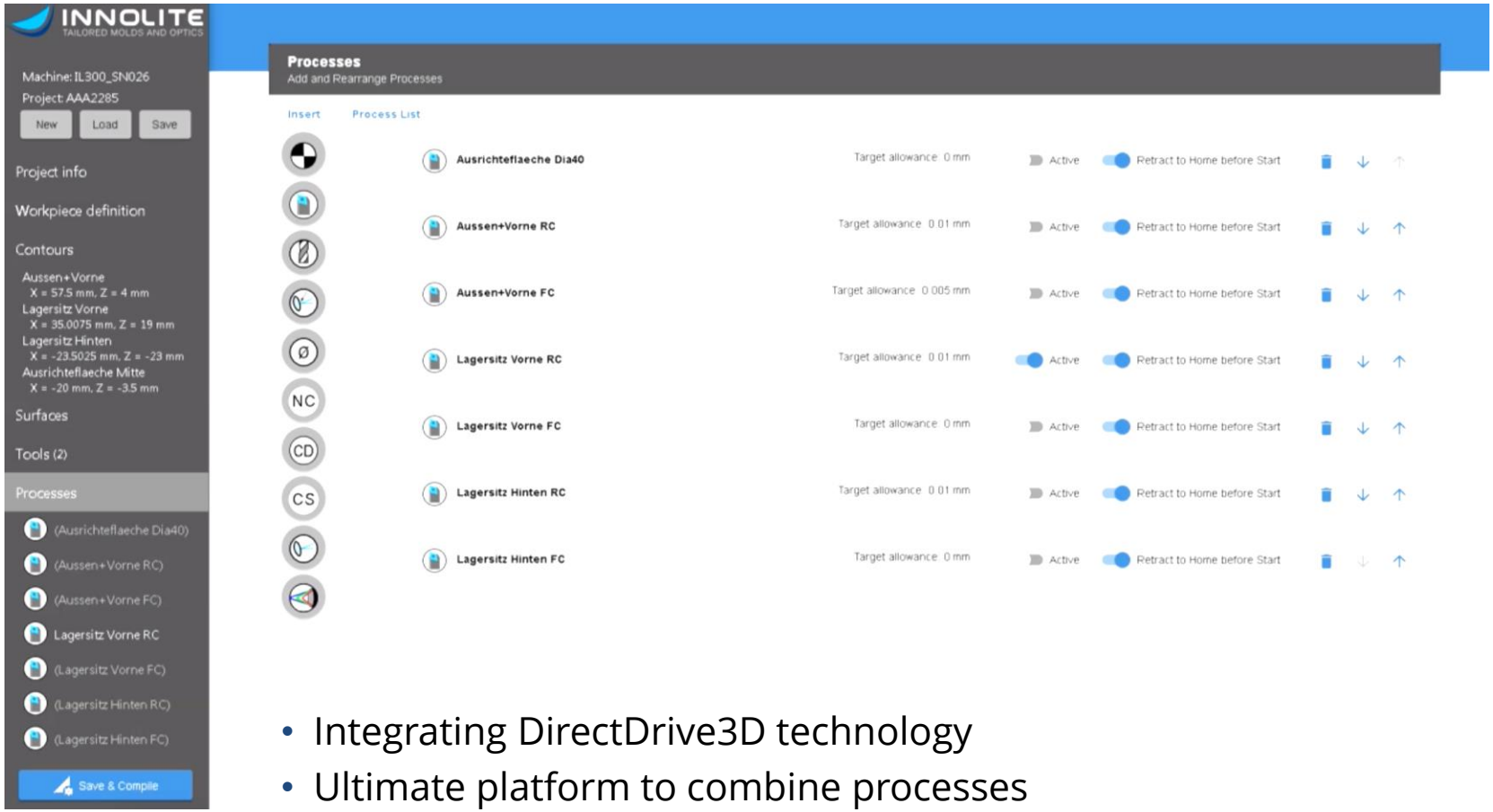
Innolite DirectDrive3D | 50 kHz

- Offline axis interpolation, equi temporal
- FPGA based control loop
- 25x more surface information vs. State of Art

INNOLITE
TAILORED MOLDS AND OPTICS

The Operator Interface

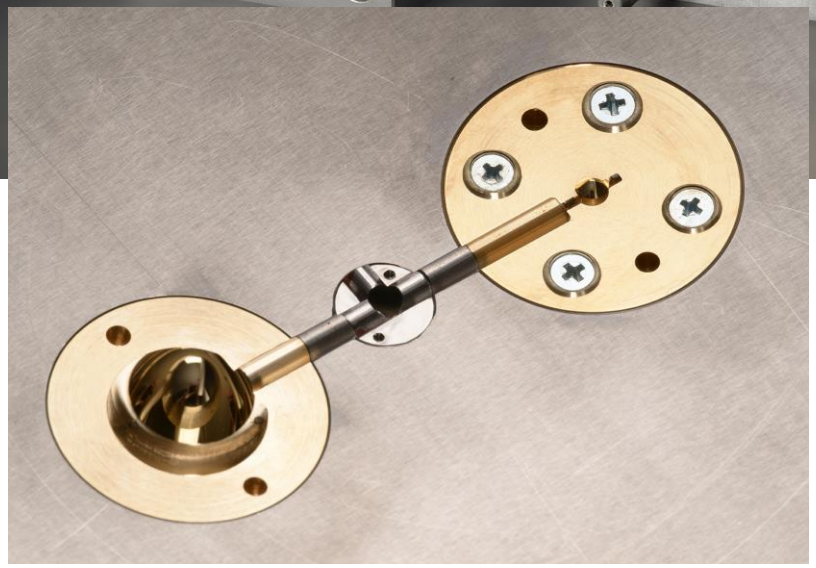
ILCAM | Key to Productivity



- Integrating DirectDrive3D technology
- Ultimate platform to combine processes

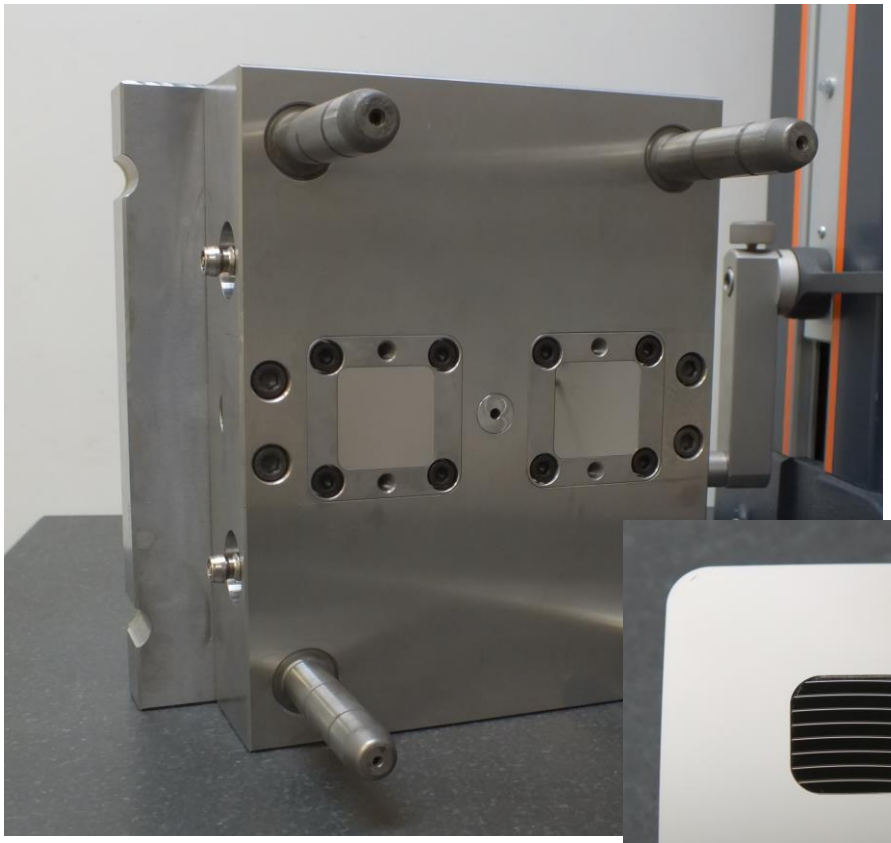
INNOLITE
TAILORED MOLDS AND OPTICS

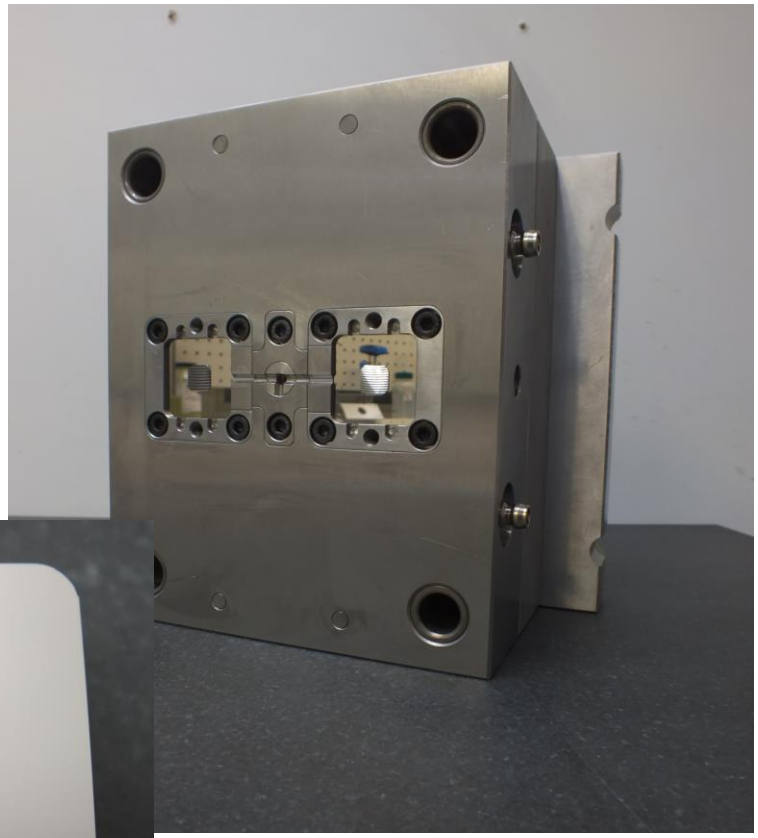
Mold manufacturing Samples



INNOLITE
TAILORED MOLDS AND OPTICS

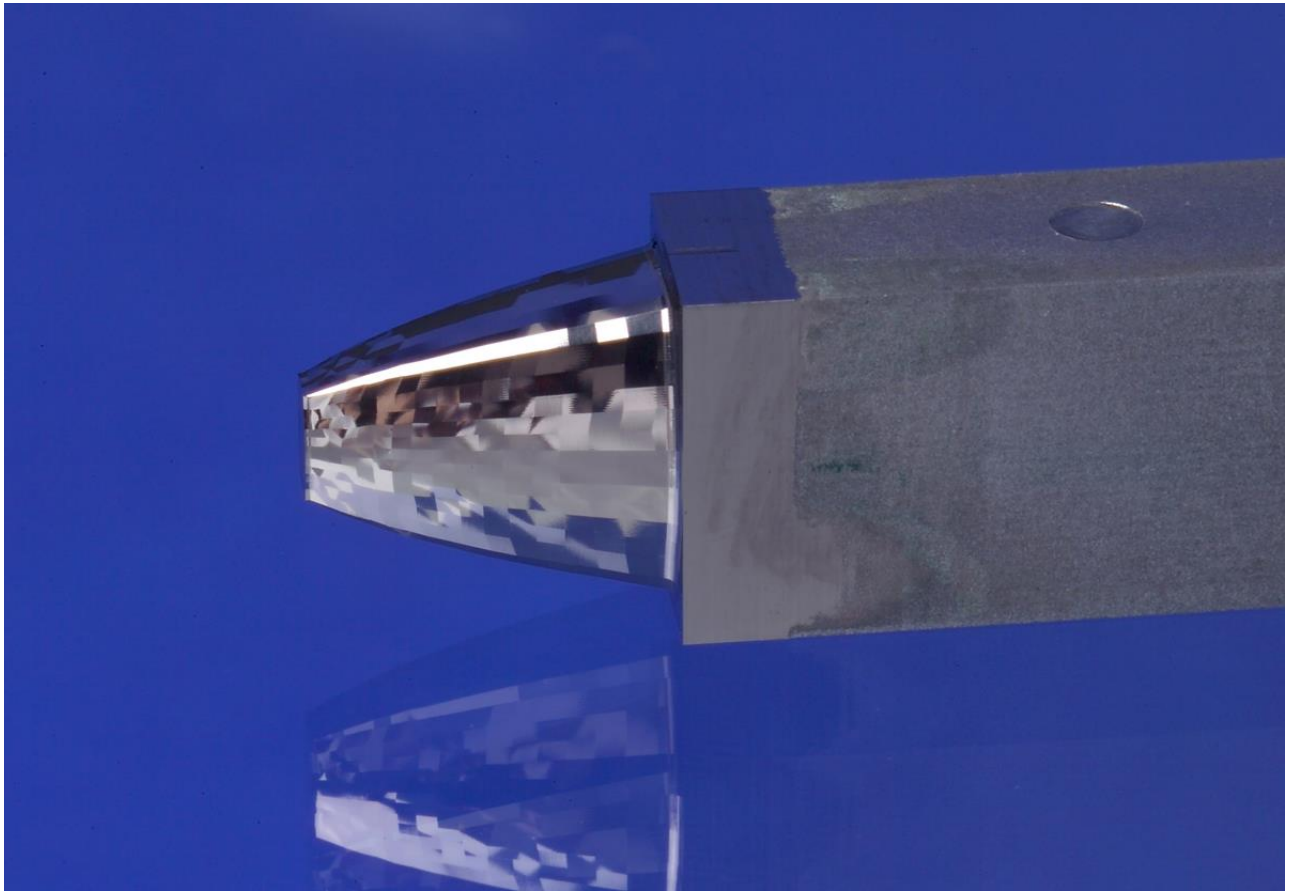
Mold manufacturing Samples
Fresnel Mold





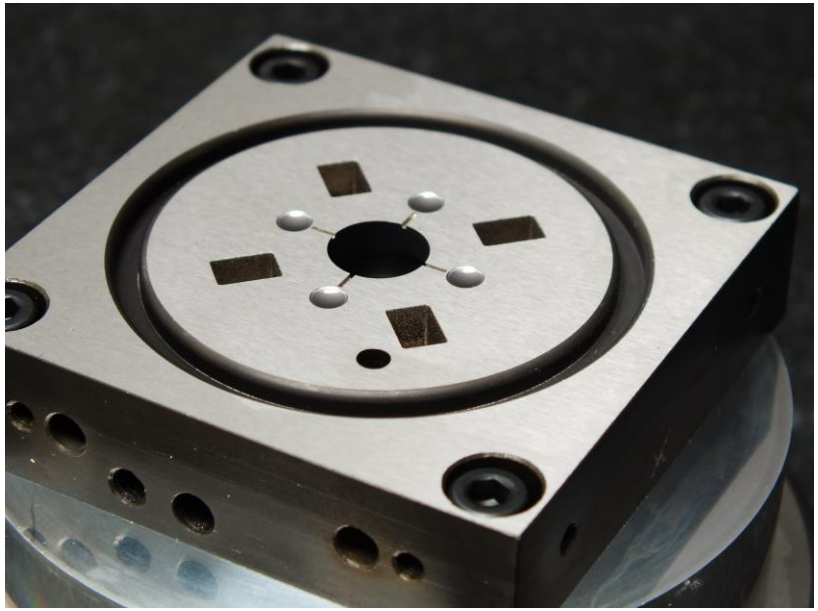
INNOLITE
TAILORED MOLDS AND OPTICS

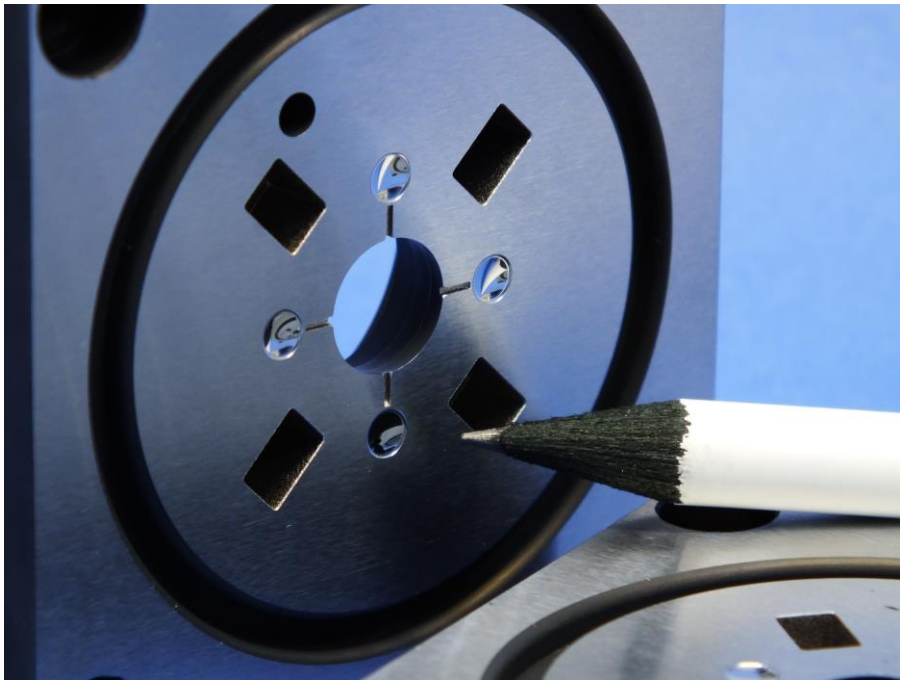
Mold manufacturing Samples



INNOLITE
TAILORED MOLDS AND OPTICS

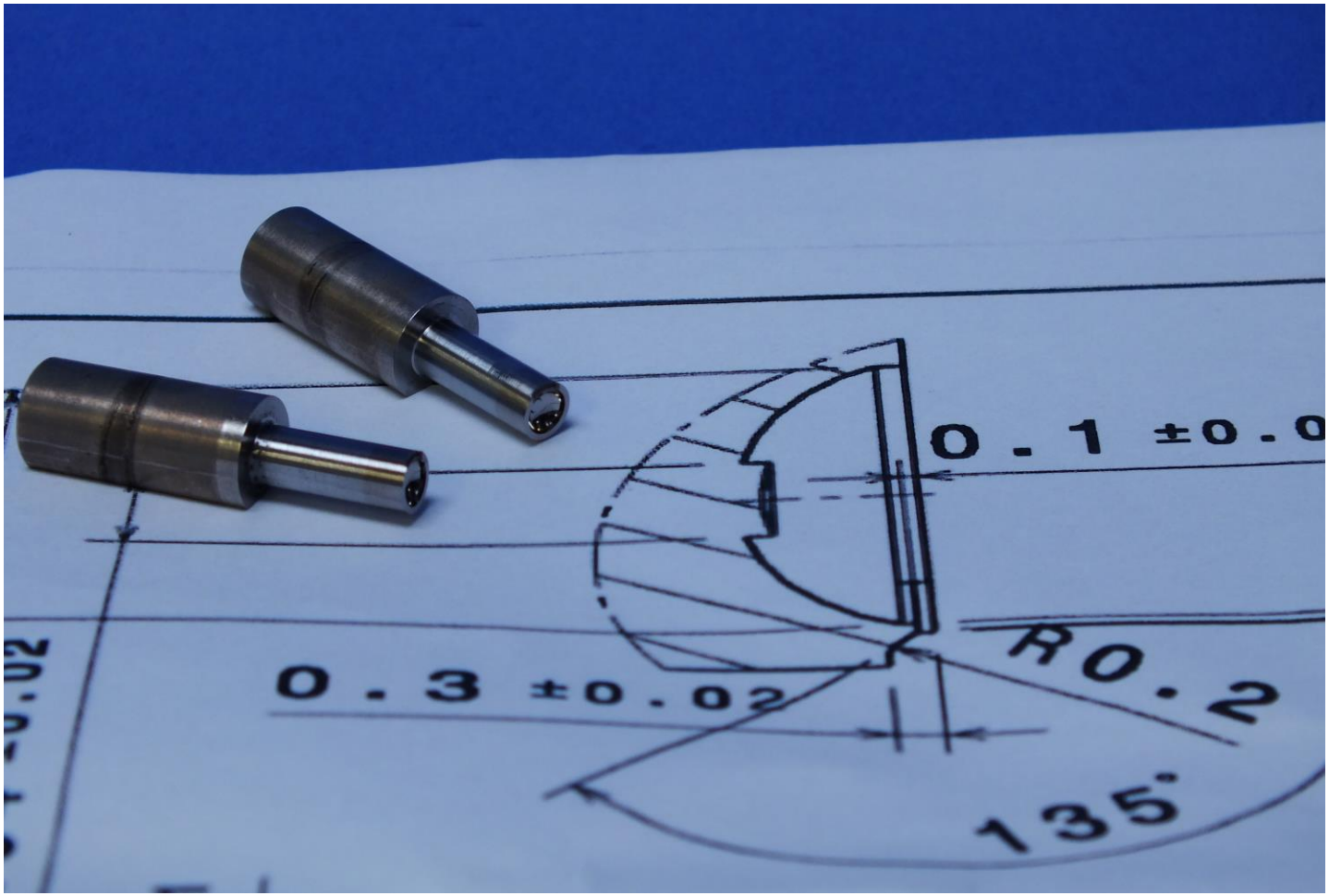
Lens Array Tool





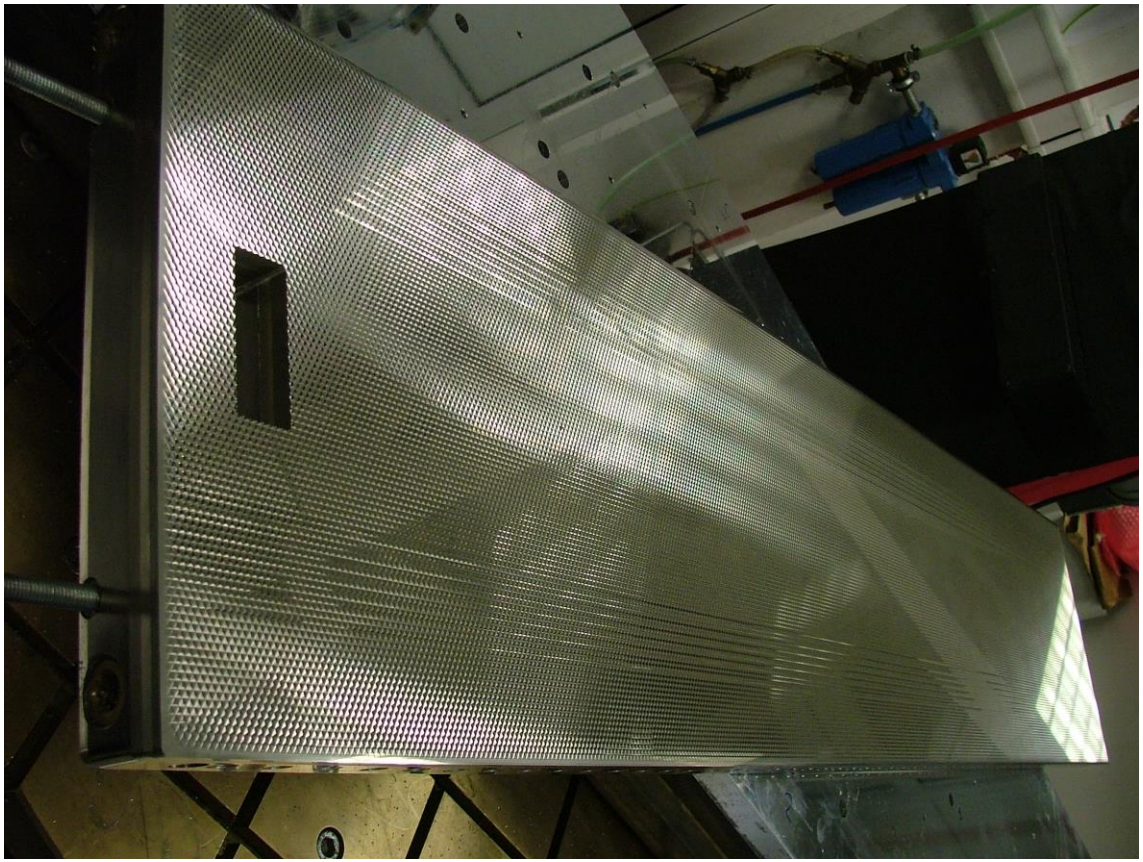
INNOLITE
TAILORED MOLDS AND OPTICS

Micro TIR Inserts



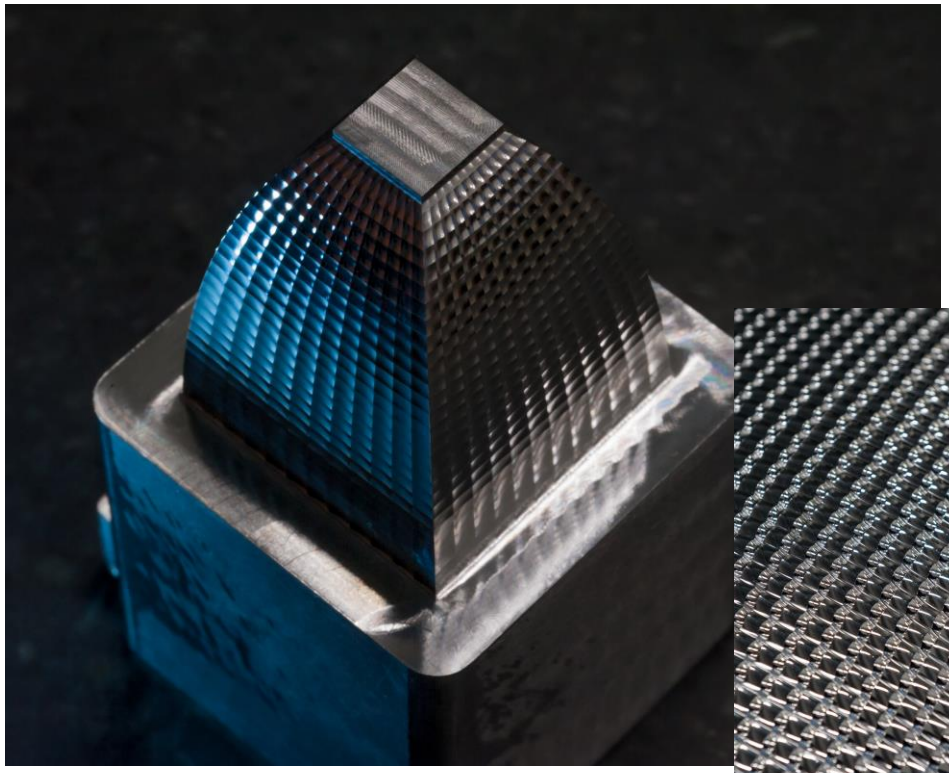
INNOLITE
TAILORED MOLDS AND OPTICS

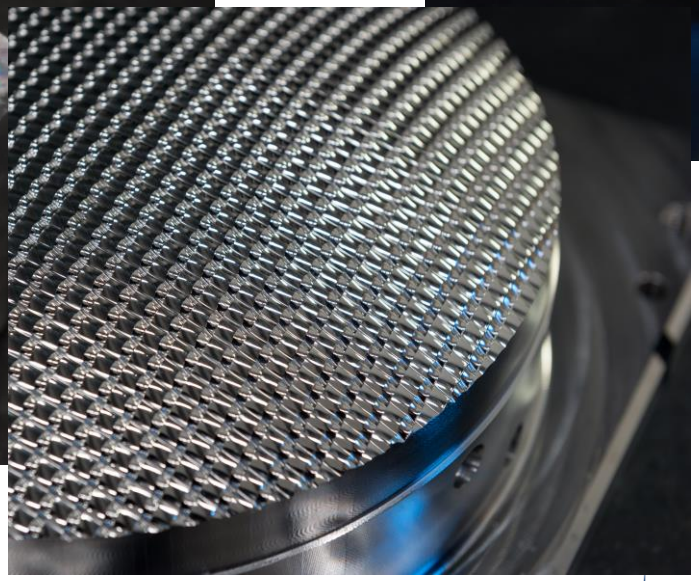
Large area structuring
1200 x 300 mm²

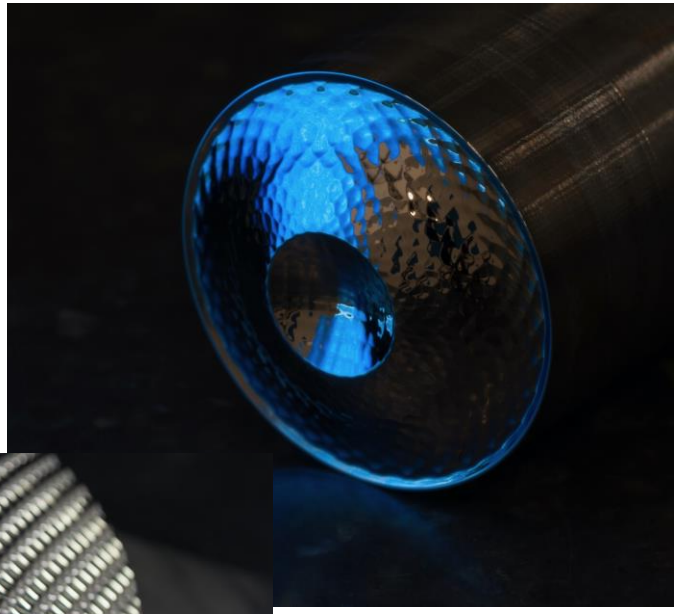


INNOLITE
TAILORED MOLDS AND OPTICS

Mold inserts reflector cores







INNOLITE
TAILORED MOLDS AND OPTICS

Concentrated Photovolatics

INNOLITE
TAILORED MOLDS AND OPTICS

Goals

'we want to constantly develop
DIAMOND MACHINING
in the fields of enhanced accuracy,
geometrical complexity,
new materials and
overall productivity'

Contribution

'we are commited to share our
knowledge in the field of
ULTRA PRECISION TECHNOLOGY
and to push it beyond the existing borders
to solve your tasks'

INNOLITE

TAILORED MOLDS AND OPTICS

Driving productivity in
ultra precision technology.

Innolite GmbH
Liebigstraße 20
52070 Aachen
Germany

info@innolite.de
www.innolite.com
+49 (0) 241 475708-0