



## AT A GLANCE

Customized GRIN lenses in a variety of NA, length, and antireflection coatings, incl. design and simulation.



### Features

- Diameter:  $125 \mu\text{m}$   
other diameters on request
- Length:  $400 \mu\text{m}$  –  $2000 \mu\text{m}$
- NA: 0.138 / 0.249 / 0.287
- AR-coating on single or both sides

### Applications

- Beam collimating and forming
- Combination with SM fiber
- Micro optical bench
- Free space optics
- Hybrid integration platform
- On-chip integration of crystals, isolators

### GRIN Lenses $125 \mu\text{m}$

$125 \mu\text{m}$  diameter GRIN lenses with the same diameter to the standard fiber opens up new applications in combination with:

- integrated optics
- single mode fibers

HHI offers customized GRIN lenses in a high variety of NA, length, and antireflection coating including design and simulation.

## References

### International R&D projects

SPRINTER

TERA6G

POLYNICES

(funded by EU commission)

### National R&D projects

PolyChrome Berlin

QuNET+LORELAY

(funded by BMBF)



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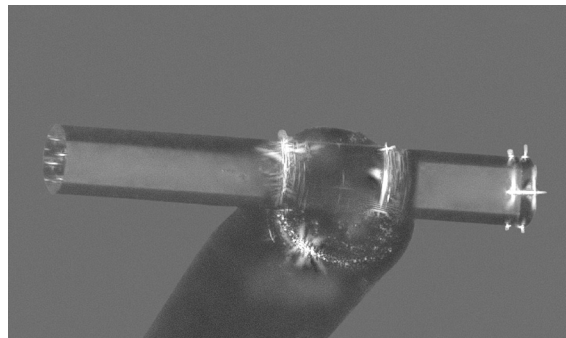
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Germany

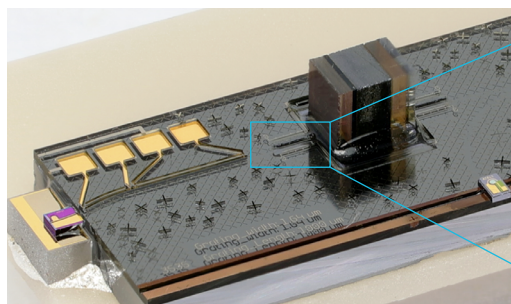
[www.hhi.fraunhofer.de/pc](http://www.hhi.fraunhofer.de/pc)

## GRIN Lens



*GRIN lens with 125  $\mu$ m diameter*

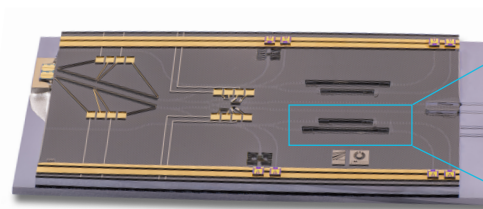
## Applications



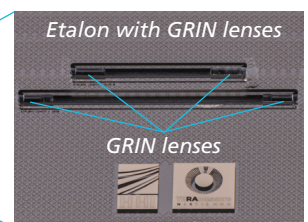
*Tunable laser with integrated isolator*



*Collimating GRIN lens*

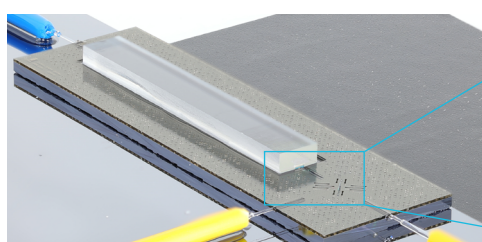


*Tunable laser source with etalon for wavelength meters*

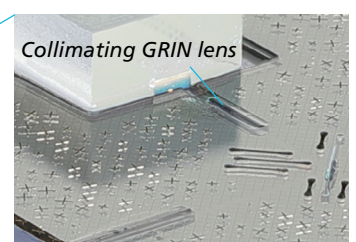


*Etalon with GRIN lenses*

*GRIN lenses*



*Integrated photon source with embedded crystal*



*Collimating GRIN lens*