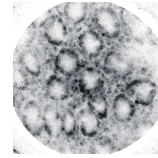


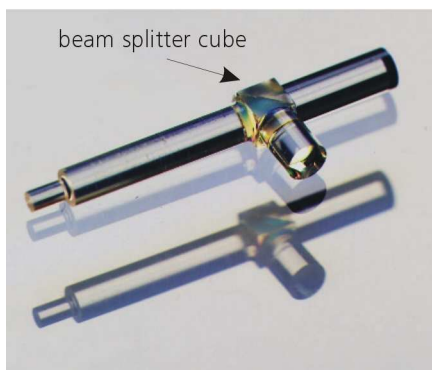
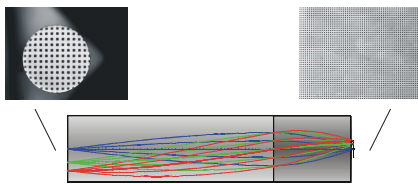
In Vivo Medical Confocal Imaging and Optical Coherence Tomography

- GRIN Imaging systems
- Diameter: 0.5 mm / 1.0 mm / 1.8 mm / (2.0) mm
- Prisms to change the direction of view can be assembled
- Combination with optical fibers and imaging fiber bundles on request
- Optical design for customized solutions
- AR- and splitter (dichroic, polarizing, non-polarizing) coatings on request
- Mounted in stainless steel tubes on request



Colonic tissue of the rat imaged by an endoscopic confocal laser scanning probe using GRIN front optics

In Vivo Microendoscopy



J. Neurosci. 26(41): 10380-6

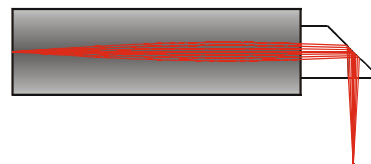
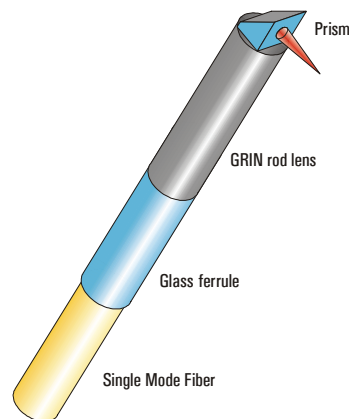
- Standard diameters: 0.5, 1.0, 1.8, (2.0) mm
- Standard magnifications: 1:4.9 and 1:2.6
- Object NA: 0.5
- Resolution limit $< 0.7 \mu\text{m}$

Tolerances GRIN lens:

lens length z: $\pm 5\%$ due to variations of the gradient constant
 diameter d: $+ 0 / - 0.01 \text{ mm}$
 working distance s: $\pm 0.01 \text{ mm}$

Variations due to modifications of the production process are possible.
 It is the user's responsibility to determine suitability for the user's purpose.

In Vivo OCT Endoscopy



- Diameters: 1.0, 1.8, (0.5) mm
- working distance, spot size and divergence can be designed to customized specifications
- Diffraction-limited Gaussian spots
- Generation of internal reference signal within probe possible
- Example: typical amplitude modulation of back reflected interference signal in the fiber about 80 % (moving mirror as reflector)

Surface quality:

$5 / 3 \times 0.025$; $L 3 \times 0.005$; E 0 (defined by DIN ISO 10110-7:2000-02).
 The surface quality is defined within 90 % of the lens diameter. Outside of this area defects are allowed