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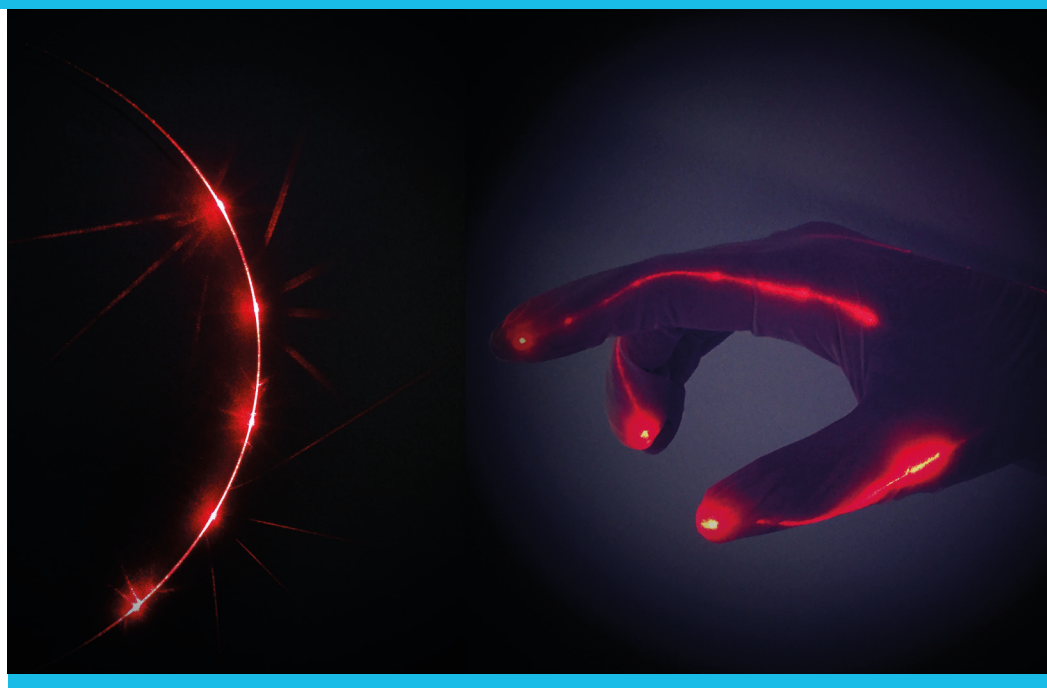
FIBER OPTICAL SENSOR TECHNOLOGY

AT A GLANCE

- Fiber optical 3D shape sensors
- Fiber optical evaluation units
- Customized fiber Bragg gratings applying femtosecond laser technology



Features

- Small and light sensor system
- Immune against magnetic fields
- Integrable in existing systems
- Sensor constructed as disposal
- Applying new femtosecond laser production technique

Applications

- Medical Sector
  - heart catheters
  - medical endoscopes
  - colonoscopes
- Oil&Gas Industry
  - downhole monitoring
  - deepwater offshore field monitoring
- Maritime Sector
  - flexible cable monitoring
  - hydrophones
- Geological Sector
  - optical geophones
  - monitoring of landslides

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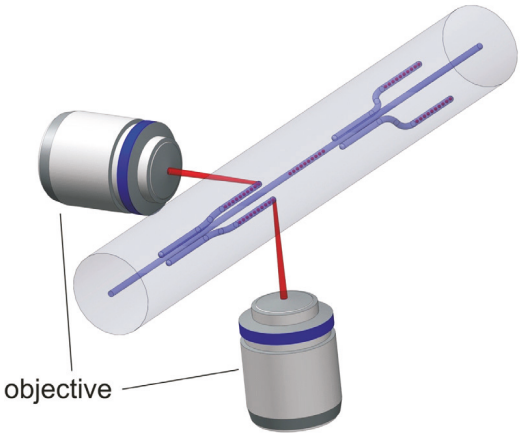


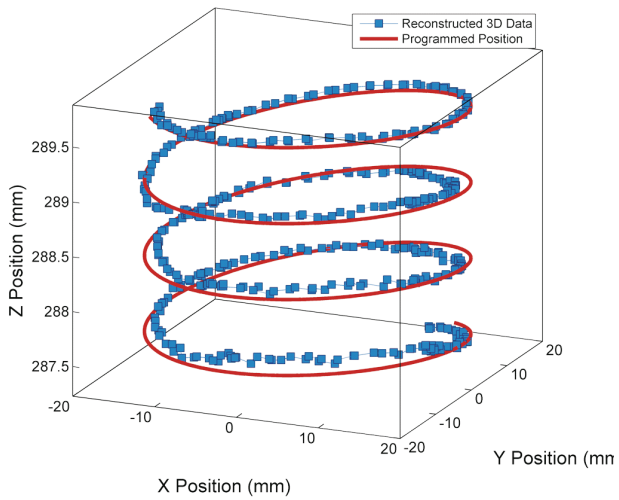
Concept of the 3D sensor fiber with femtosecond laser processed microwaveguide and fiber Bragg gratings within the fiber cladding

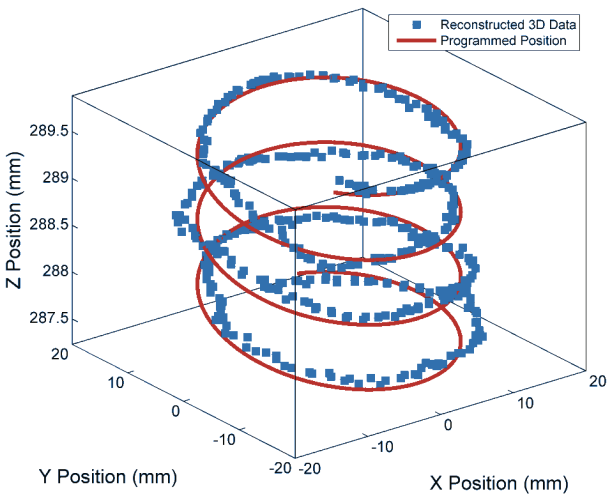
3D Shape Sensing Approach

Direct femtosecond laser based processing of Bragg gratings into the core and the cladding of an optical fiber makes it possible using just a single standard one core optical fiber for 3D shape monitoring with the advantage of no need for additional optics, the high mechanical flexibility of a single 125 or 80 µm fiber and the use of commercially available standard connectors and components that are well known from telecommunications.

Patent pending DE 10 2013 205 205.7

Demonstration: Precision Measurement





Reconstruction of the localization of a catheter tip – The mean absolute error is <1 mm.

Contact

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