

THIN FILM LITHIUM NIOBATE PHOTONIC INTEGRATED CIRCUITS



AT A GLANCE

Photonic integrated circuits based on thin film lithium niobate for communication and quantum computing

Dr. Gerrit Fiol
Photonic Components

Phone +49 30 31002-228
gerrit.fiol@hhi.fraunhofer.de

Fraunhofer Heinrich Hertz Institute
Einsteinufer 37, 10587 Berlin
Germany

www.hhi.fraunhofer.de/pc

Building Blocks

- High-speed phase shifters
- Thermo-optic phase shifters
- On-chip resistors
- Fiber spot-size converters
- Low-loss waveguides
- Multi-mode interferometer
- Directional coupler

Applications

- Tele- and datacom
- Sensing
- Quantum computing

Technical Background

Photonic integrated circuits based on thin film lithium niobate are of interest for future tele- and datacom links and quantum applications. The broad optical spectrum from 450 - 4500 nm allows for a wide range of sensing applications as well.

The high-speed phase shifters are based on a traveling wave design, yielding high RF-bandwidth and low V_{π} . Complementary building blocks such as thermo-optic phase shifters, on-chip resistors, fiber spot-size converters and more are available for dedicated PICs.

The PICs are fabricated at the in-house ISO 9001 certified wafer process line of Fraunhofer HHI.