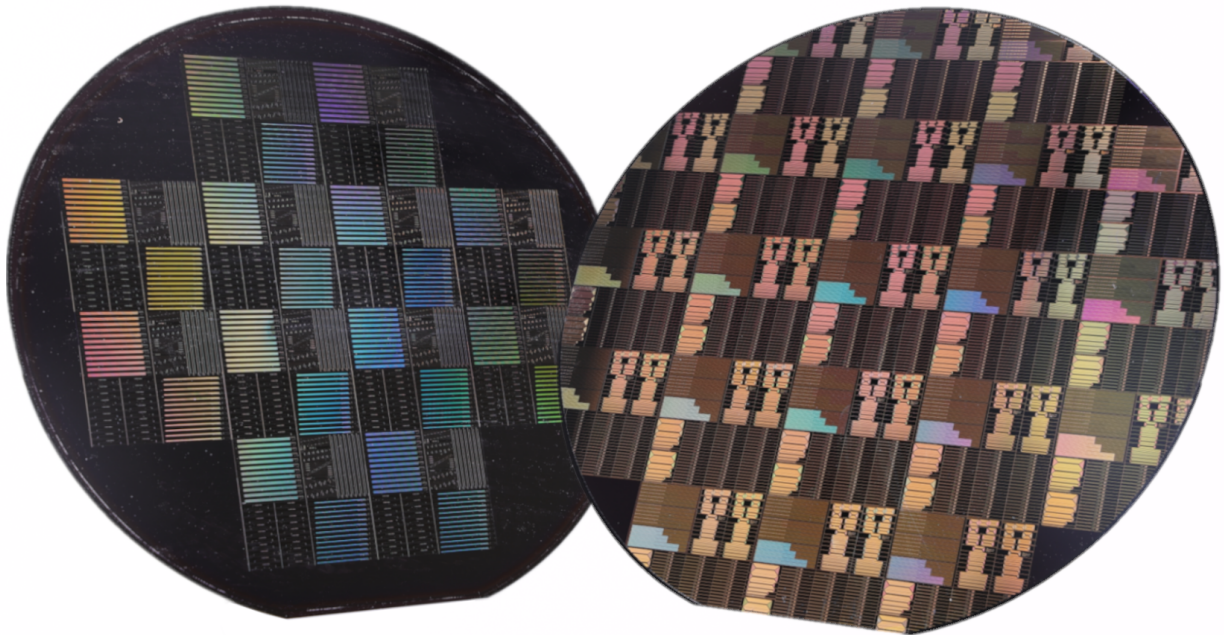


# SILICON NITRIDE INTEGRATION PLATFORM



## AT A GLANCE

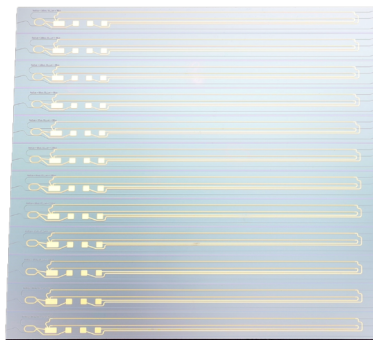
The SiN line of Fraunhofer HHI is specifically suitable for active passive integration. Photonic building blocks including ring resonators, MMIs, AWGs, VOAs, tunable gratings and phase shifters.

### Features

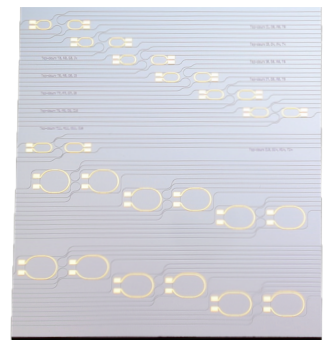
- Low-loss waveguides
- Passive and thermo-optical elements
- Efficient hybrid integration of active elements (InP, GaAs, PolyBoard etc.)
- VIS to NIR wavelength range
- Different thicknesses of  $\text{Si}_3\text{N}_4$  available (200 nm / 400 nm / 800 nm)

### Services

- PIC design based on PDK for different wavelength
- Customized design
- Fabrication and hybrid integration of active and passive components



*Tunable gratings*



*Tunable ring resonators*

## References

### International R&D projects

QSNP  
 Qu-Test / Qu-Pilot  
 (funded by EU commission)

### National R&D projects

PolyChrome Berlin  
 PoLiSiQ  
 optION  
 (funded by BMBF)

### Association

PolyPhotonics e.V.  
[www.polyphotonics-berlin.de](http://www.polyphotonics-berlin.de)

Dr. Moritz Kleinert  
**Hybrid Integration and Sensing**

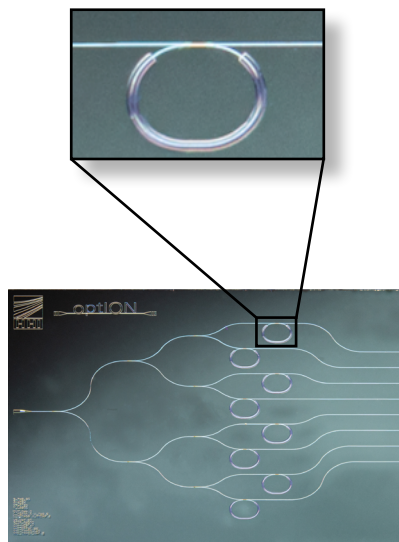
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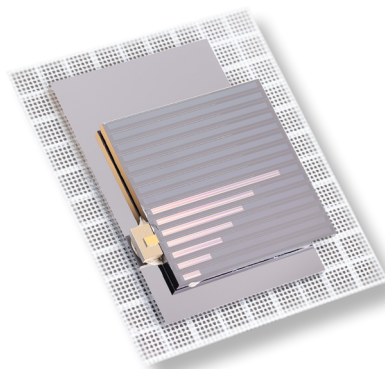
[www.hhi.fraunhofer.de/pc](http://www.hhi.fraunhofer.de/pc)

## Applications

- Telecom / datacom
- Sensing and analytics
- Quantum technology
- Medical and life sciences



*Ring resonators for sensing and analytics*

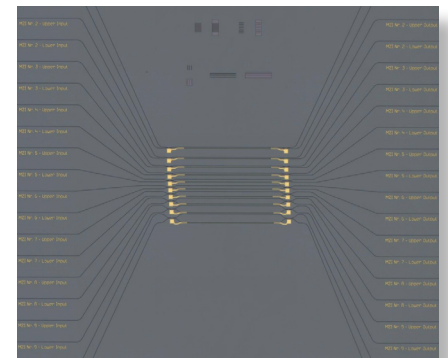


*InP-SiN integration*

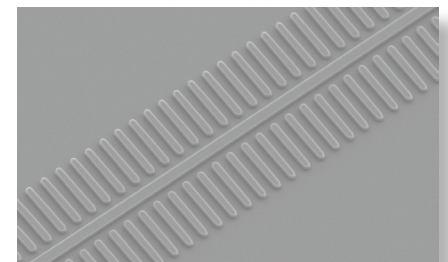
## Technical Background

Low loss structures such as ring resonators, MMI and AWGs, gratings as well as thermo-optical elements like phase shifters VOA and tunable gratings are fabricated on wafer scale.

Customized designs are available.



*Switches*



*Gratings*



*Delay line interferometer*