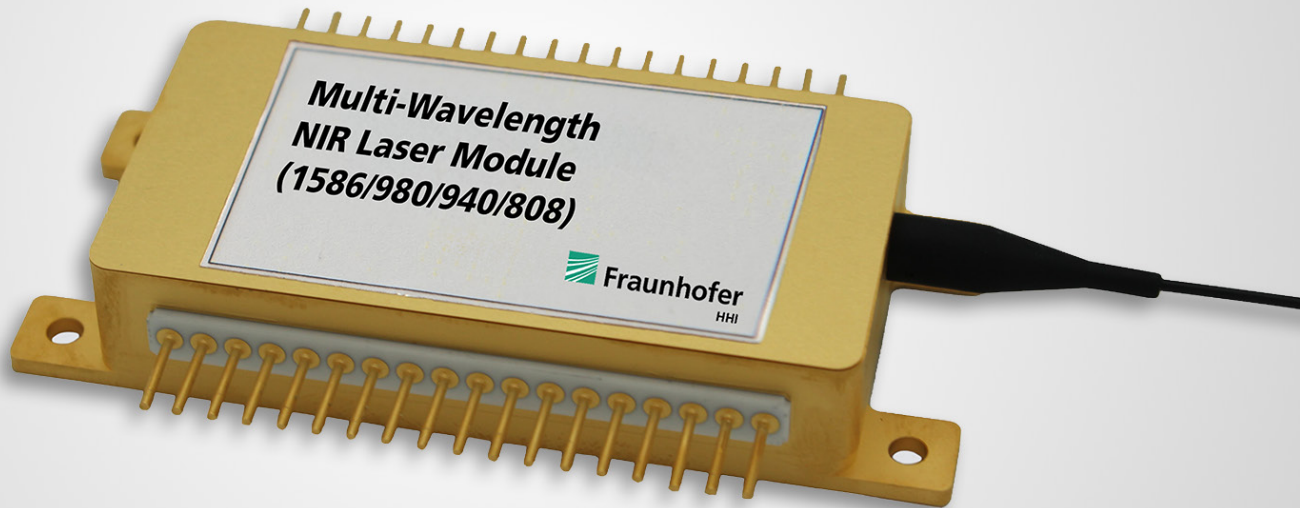


# MULTI-WAVELENGTH TUNABLE LASERS FROM NIR DOWN TO VIS



## AT A GLANCE

Application-specific tunable and multi-wavelength lasers based on hybrid integrated PolyBoard platform combined with on-PIC micro-optical functionalities



### PolyBoard Hybrid Integration of Optical Sources

Fraunhofer HHI's PolyBoard hybrid photonic integration technology enables optical laser sources with tailorable emission wavelengths from NIR down to VIS

- External-cavity lasers with linewidths < 1 kHz
- Mode-locked lasers with tailorable repetition rate down to 1 GHz
- Concept extendable to wavelengths from NIR down to VIS

### Features

- Polymer waveguides for highly-efficient tunability and broad wavelength coverage (VIS-NIR)
- Hybrid integration of actives for different wavelengths (e.g. InP, GaAs, GaN)
- Combinable with on-PIC micro-optical functionalities (e.g. optical isolators, polarisation filters & rotators, wavelength mux-demux filters, wavelength meters)

### Applications

- Telecom / Datacom
- Quantum technologies
- Sensing and analytics
- mmW / THz photonics

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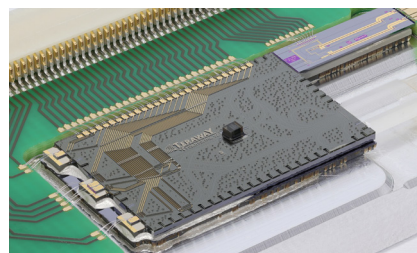
[www.hhi.fraunhofer.de/phs](http://www.hhi.fraunhofer.de/phs)

## Tunable lasers



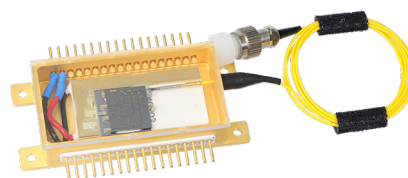
Tunable laser modules for 1550 nm, 1064 nm and 780 nm

## Photonic sources for the generation of mm W/THz signals



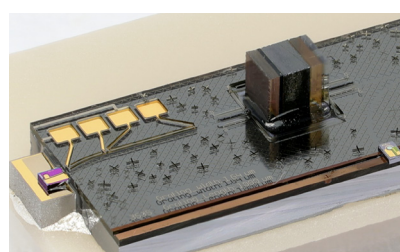
Tunable multi-wavelength optical source for 6G+ wireless communications

## Multi-wavelength sources



NIR multi-wavelength module (1586 nm, 980 nm, 940 nm, 808 nm), or RGB

## Additional on-PIC photonic functionalities available



Optical isolators



Etalons for wavelength meters