

Fiber to chip coupling optimization set-up

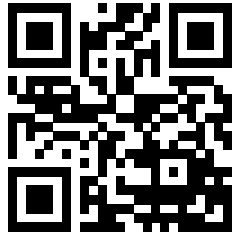
## Services and Expertise

### SERVICE:

- Scientific consulting
- Technical support
- Feasibility studies
- Cost analysis
- Project coordination

### EXPERTISE:

- Definition of system level architecture
- Optimization of photonic building blocks and systems
- Design of communication links for telecom and Datacom
- Packaging analysis for mechanical and thermal management
- Optimization of transmission lines, signal routing and printed circuit board layout
- Experimental characterization of electro-optical devices
- Evaluation of system performance
- Statistical analysis of raw data



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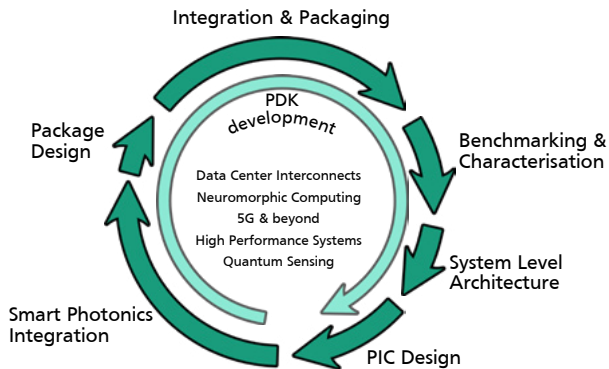
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 **Fraunhofer**  
IZM

Fraunhofer Institute for Reliability  
and Microintegration IZM

**Innovative Products, Cutting-edge  
Engineering**

**Photonic & Plasmonic  
Systems**



## Philosophy

The “Photonic & Plasmonic Systems” group is an interdisciplinary team of researchers engaged in the fields of photonics, plasmonics and quantum technologies. Our group’s core expertise and fields of interest include Photonic Integrated Circuit Design, Thermo-Mechanical Analysis, Communication Links Design, Experimental Characterization and performance evaluation, Quantum Technology, Neuromorphic Computing, 5G/6G & Beyond, Data Centers interconnects, and Next Generation Computing.

We believe that research cannot be segregated, rather that each field is a link of a circular chain. Under the umbrella of Fraunhofer IZM we apply this philosophy to our work, by approaching each task in a holistic manner, from System Level Design to Device and Packaging Optimization to Performance evaluation and finally refinement.

This approach has been demonstrated in the numerous national and international projects we have participated in. Since research is our passion, we are always interested in new ideas, challenges and technology, so feel free to contact us.

## Projects



### 6G-MUSICAL

- High-rate multi-band communication
- Radio sensing and communication
- Precise localization and tracking
- 3D imaging with accuracy
- New RF communication paradigms



### ALLEGRO

- End-to-end sliceable architecture
- High transmission capacity
- Low power consumption
- Secure infrastructures and data
- Reliable optical networks



### ADOPTION

- Co-packaged optics for cloud
- SiP-based transceiver modules
- External laser sources
- Optical port breakout
- Hyperscale data center networks



### MASSTART

- Mass manufacturing of transceivers
- Terabit-era photonic transceivers
- Cost reduction to 1€/Gb/s
- High-speed assembly and characterization
- Efficient mass production



### OCTAPUS

- Optical circuit switched network
- Time-sensitive high-speed networks
- Passive optical network architecture
- Reconfigurable central office environments
- Ultra-dynamic network design



### PROMETHEUS

- Programmable photonics technology
- Ultra-fast spiking neural networks
- High-speed processing systems
- Low-power photonic processing
- Machine learning architectures

Photonic Integrated Circuits, Optical Neural Networks, Quantum Technologies, 5G & 6G, Reliability, Sustainability, Packaging - if those buzzwords mean technological advancement to you, give you ideas or make you think of challenges and solutions, then we have something in common. Get in touch!

**Let us shape the future of photonics and plasmonics together.**