Modular interposer architecture providing scalable:

- Power delivery
- Heat removal
- Optical communication

Available packaging solutions cannot support 3D integration density scaling and beyond-CMOS devices, constraining systemability with respect to energy efficiency, reliability, and computational performance, e.g. in data centers and IoT applications.

The tutorial demonstrates the smart implementation and robust manufacturability of advanced More-than-Moore components into a modular and scalable interposer, supporting system-on-chip and system-in-package evolution. Each of the three major topics Power delivery, Heat removal and Optical communication will be introduced by an overview presentation, followed with specific insights into sub-components, as well as a solution approach based on the successful outcomes of the European project CarrICool.

Besides a game-changing platform for scale-up of future, many-core, exascale computing systems the tutorial will also present a strategic supplier base in Europe for high-end HPC and data center components, as well as for advanced systems integration capabilities.

**Registration**

www.izm.fraunhofer.de/tt_24

Please register by May 26th 2017 at the latest.

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**Participation Fee**

295.00 euro per person, incl. proceedings and buffet

**Venue**

Fraunhofer Institute for Reliability and Microintegration IZM

Gustav-Meyer-Allee 25 | bldg. 17.3, room 60b | 13355 Berlin

**Who Should Attend**

Equipment manufacturers, developers and electronic packaging specialists who are interested in the topics silicon interposers, TSVs, liquid cooling, power delivery, buck-converters, silicon photonics, high-Q inductors, passive coupling.

In cooperation with:

IBM Research - Zurich | Technical University of Chemnitz | Tyndall National Institute | Optocap Ltd | IPDIA | ETH Zuerich | Institute of Electron Technology Warsaw | AMIC GmbH
July 4th, 2017
18.00 Evening reception at Fraunhofer IZM

July 5th, 2017
9.00 General trends and CarriCool
Bernhard Wunderle, TU Chemnitz

9.15 Power conversion challenges for datacentre and mobile applications
Paul McCloskey, Tyndall National Institute

9.45 PICS core based passives as enabler of highly integrated PwrSOC modules for IoT applications
Mohamed Jatlaoui, IPDIA

10.05 Design optimization and control of integrated inductor-based voltage regulators using deep-submicron CMOS technologies
Pedro Martins Bezerra, Eidgenössische Technische Hochschule Zürich

10.25 Break

10.40 Scalable silicon photonics packaging for next generation data centers
Antonio La Porta, IBM Research - Zurich

11.10 High-precision assembly technologies and interconnects for photonic components
Jessica Kleff, Fraunhofer IZM

11.30 Integrated optics in a microprocessor module enabled by passive alignment
Douglas Bremner, Optocap Ltd.

11.50 Lunch and guided tours through the research labs

13.00 Optical communication
Antonio La Porta, IBM Research - Zurich

13.30 Scalable thermal management for data center and high-performance computing
Thomas Brunschwiler, IBM Research - Zurich

14.00 Multi-scale thermo-mechanical investigation by Raman-spectroscopy and module level FEM modeling
Martin Stiebing, TU Chemnitz
Raúl Mroško, AMIC GmbH

14.20 Liquid in the package: Signaling, sealing, corrosion
Tomasz Bieniek, Institute of Electron Technology
Thomas Brunschwiler, IBM Research - Zurich

14.40 Dual-side liquid cooling by Si-interposer technology with embedded microchannels
Wolfram Steller, Fraunhofer IZM

15.00 Wrap-up
M. Juergen Wolf, Fraunhofer IZM

15.15 End