We are Austria's largest Research and Technology Organisation and an international player in the research areas that we cover. This makes us a leading development partner for industry and a top employer in the scientific community. Applications are invited for a:

PhD Thesis "Development of photonic integrated circuit devices for medical diagnostic application"

There is a growing demand for photonic technology based healthcare devices suitable for point-of-care diagnostic applications. We consider integrated photonics as the most viable route to realize such devices. Similar to integrated electronics, integrated photonics enables the miniaturization of highly complex systems and their cost-effective mass production using semiconductor-manufacturing processes. In particular, silicon photonics has an extremely strong potential, principally due to its ability to leverage-off many of the advances offered by CMOS electronics. Recently, CMOS compatible silicon nitride waveguides have been attracting increasing interest due to their transparency in the visible wavelength region, which is of practical relevance in medical sensing applications.
This thesis is carried out in the framework of an international research project with renowned academic and industrial partners. This project aims at the development of novel silicon nitride waveguide key components (input and output light couplers, waveguide couplers, integrated polarization splitters, integrated light sources and photodetectors) and their integration in medical diagnostic sensing devices.
AIT has a high-end photonic simulation environment (256 core simulation cluster with 488GB RAM with state-of-the-art software tools) and a well-equipped waveguide characterization setup. The AIT photonic experts have a long standing expertise in the development of integrated photonic devices.

Description

- Study on theoretical fundaments and survey on existing related work of others
- Simulation, modelling, design and optical characterization of photonic waveguide key components
- Publication of research results in scientific journals

Candidate profile

- Master degree in physics or electrical engineering with specialization in photonics
- Profound theoretical understanding of electromagnetic wave propagation
- Experience in programming (Matlab, C++, LabVIEW)
- Practical skills in the use of high-end laboratory equipment
- Disciplined, self-motivated work style and ability to work independently
- Very good written and spoken English and German

Please submit your application documents, including certificates, to

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