



IEEE SEMINAR

Silicon-Nanophotonic-Based Terahertz Generation

Dr. Michael Nagel
Chief Engineer, Institute of Semiconductor Electronics
RWTH Aachen
Germany

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TIME: 10:00 am – 11:30 am

LOCATION: Davis Centre #1304, University of Waterloo

INVITED BY: Professor S. Safavi-Naeini

See attached for Abstract & Bio

Abstract:

The number of worldwide research activities focusing on the interaction of terahertz (THz) radiation with various forms of matter is growing very rapidly. Highly attractive THz applications emerged in the fields of non-invasive biological and medical diagnostics, chemical sensing, non-destructive material testing, security applications and high-speed telecommunications. Still in an early stage, the current research in solid-state THz technology is mainly directed to individual component development with focus on the improvement of specific properties like detector sensitivity, source power, and device operating temperature. In order to promote the transfer of terahertz technology from lab to real world applications a mature technology platform (like Silicon) for cost-efficient compact device is urgently needed. Silicon nanophotonic structures bear a great but still largely underutilized potential for optical THz signal generation and detection. In this presentation some basic concepts are discussed and first proof-of-principle experiments will be presented.

Bio:

Michael Nagel was born in Viersen, Germany, in 1970. He received his Ph. D. from the Rheinisch-Westfälische Technische Hochschule (RWTH) Aachen University, Germany, in 2003. During his thesis, he developed the world-wide first label-free DNA sensor chip utilizing THz range frequencies. Since 2004 he is chief engineer at the Institute of Semiconductor Electronics, RWTH Aachen, where he directs applied and fundamental research projects focusing on terahertz technology.

He has authored or co-authored over 80 publications and international conference presentations and filed six patents. Dr. Nagel was awarded with the Roberts Prize 2004 of the Institute of Physics and Engineering in Medicine and is recipient of the Wilhelm Borchers Medallion of the RWTH Aachen University.