

Photonic Integrated Circuits on Silicon

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EC 3930



Register to Attend Via Zoom: <https://bit.ly/3rbpHB1>

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Abstract: In this talk we will review research on photonic integrated circuits and some applications. We will discuss the fabrication and characterization of devices operating on guided light in the infrared wavelength range of 1.3-1.6 μm - currently the standard fiber-optic telecommunication range. Strategies for producing devices, such as modulators, detectors, monitors and other passive devices will be presented, which operate with speeds in the 30GHz range of RF modulation. Work on expanding the degrees of freedom to space division multiplexing will be introduced. Novel devices being investigated in our group, using the micro/nanofabrication techniques described here, will also be presented, such as neural probes and microelectrode arrays.

Biography: Dr. Roberto Panepucci received his Master's (1990) and Bachelor's (1989) in Applied Physics from the University of São Paulo (USP), São Carlos, and his Ph.D. from the University of Illinois at Urbana-Champaign, Illinois, USA, in 1996. He was a postdoctoral fellow at the Device Research Laboratory at Unicamp, Brazil, working on III-V devices. Dr. Panepucci joined the Cornell Nanofabrication Facility (CNF) in 1999 as Senior Researcher. He joined startup Galayor Networks in 2000 and led the MEMS R&D team in developing suspended waveguide silicon photonic devices. In 2002 he joined the Nanophotonics Group in Cornell where he led the nanofabrication of key novel silicon photonic devices in SOI technology. From 2003 to 2008 he was an Assistant Professor at FIU developing photonic devices in silicon and polymers, and received tenure with promotion to Associate Professor at FIU in 2009. He took a leave of absence to join CTI, a national research center in Brazil, as Senior Researcher where he served as General Coordinator and Deputy Director. Dr. Panepucci headed the Hardware Systems Design Division and currently coordinates projects in the area of photonic integrated circuits in silicon and the fabrication of micro and nanosystems. He has been an associated researcher with the Brazilian Neuroscience and Neurotechnology Institute (BRAINN) since 2013, coordinating research in neural probes and micro-electrode arrays. He is vice-coordinator of the CTINano, of the Strategic Laboratories of the Brazilian initiative in Nanotechnology.