Hybrid NIR/MIR silicon photonics passive devices

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Silicon photonics for the mid-infrared (MIR) wavelength is an emerging domain and a promising solution to enable low-cost, high performance, compact sensing and detection capabilities and fully compatible with CMOS technologies. Silicon on insulator (SOI) has been the most dominant platform for telecom and Datacom domain (NIR). This platform has a major asset to extend their applications in the MIR wavelengths, due to the transparency of silicon and silica in this spectral range. In this paper, we present our recent results on optical passive devices for short MIR applications. The SOI platform is used and several devices are designed, fabricated and characterized at the wavelengths of 2μm. The passive structures like waveguides, MMI, ring resonators, (de)multiplexers and beam splitters were demonstrated with high performances.