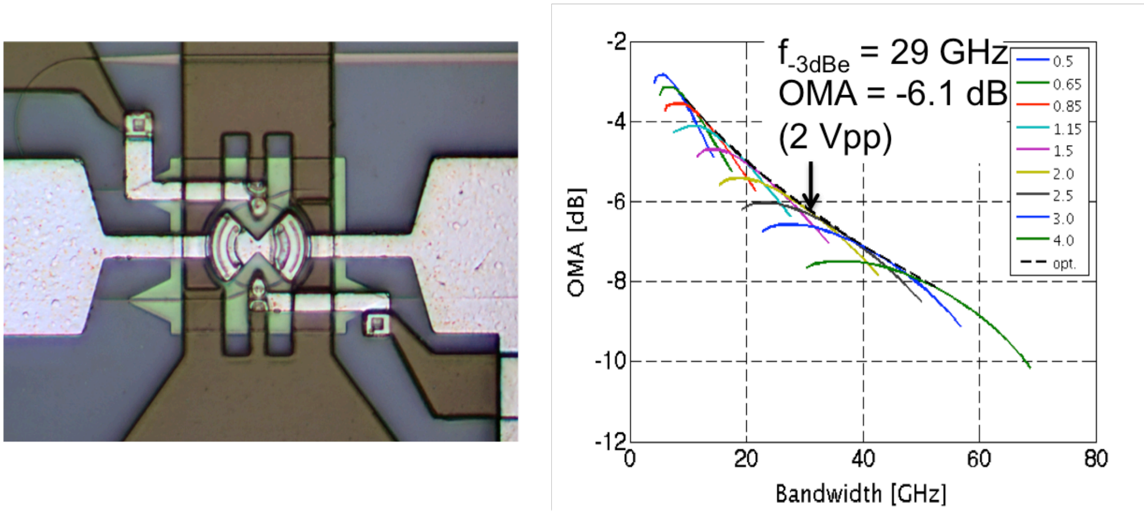

Figure 1: Micrograph of a Resonant Ring Modulator (Left) and trade-off between optical modulation amplitude (OMA) and -3 dBe cutoff frequency assuming a 2 Vpp drive signal for different device designs (Right). The legend indicates doping concentrations inside the diode phase shifter in cm^{-3}. Adapted from [1].

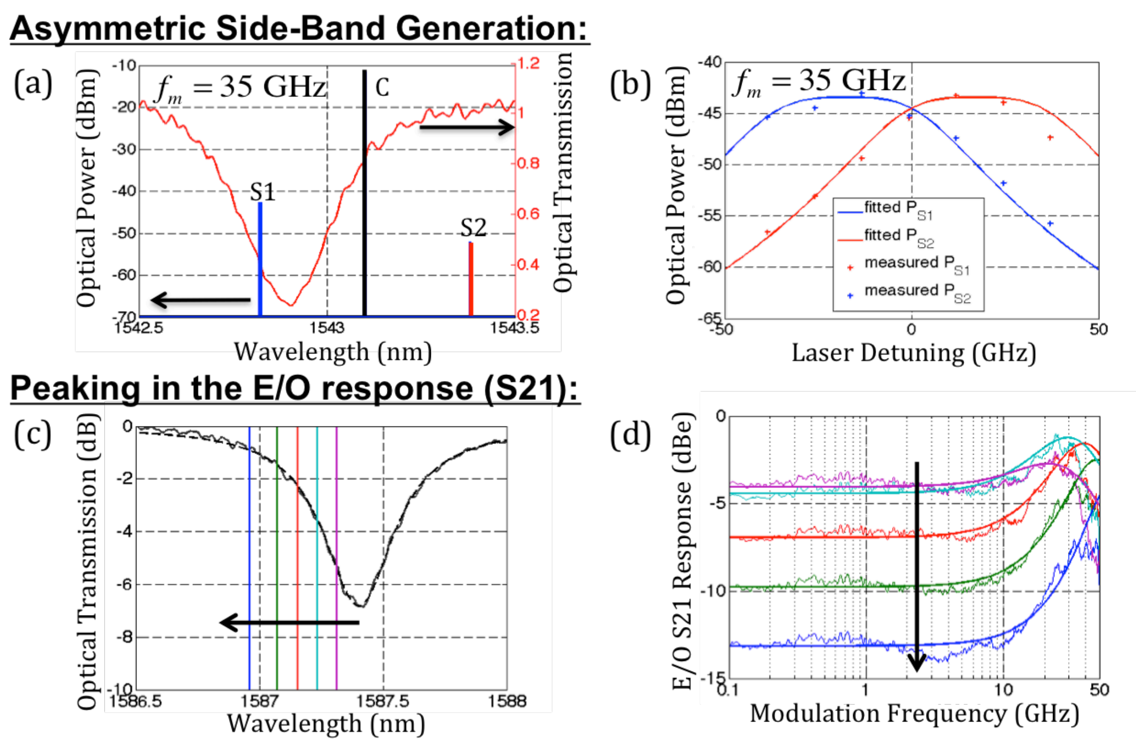

Figure 2: (a) Optical transmission through a waveguide coupled resonant ring modulator (RRM) and example of generated side-bands under 35 GHz sinusoidal modulation. "C" represents the optical carrier frequency and "S1" and "S2" the two sidebands. (b) Summary of the relative intensity of the two generated sidebands as a function of the detuning between the optical carrier and the RRM resonance. (c) wavelength of optical carriers in relation to the transmission curve of the RRM and (d) corresponding electro-optic response (S21). Peaking observed in the optical domain is closely modeled with closed form equations. Adapted from [1].

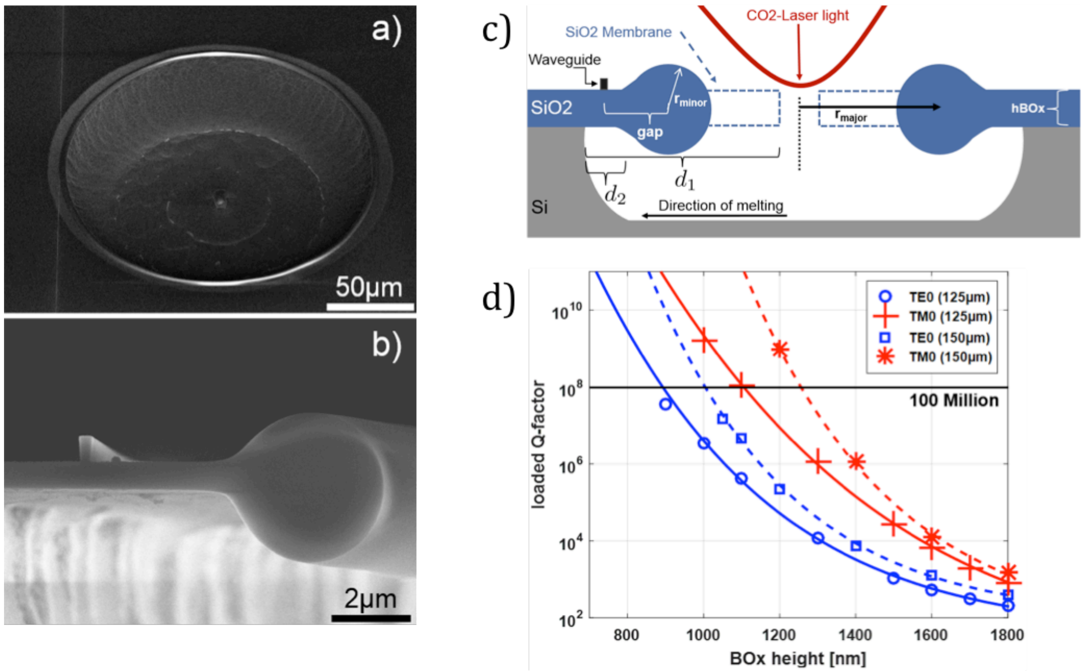

Figure 3: (a) Scanning electron microscope (SEM) image of an inverted, waveguide coupled microtoroid and (b) SEM micrograph of a device cross-section showing a silicon waveguide (Left) coupled to a SiO_2 microtoroid (right). (c) Schematic representation of the device cross section. (d) Resonator quality factor as a function of oxide thickness, radius (indicated in the legend) and polarization (also indicated in the legend). Adapted from [6].

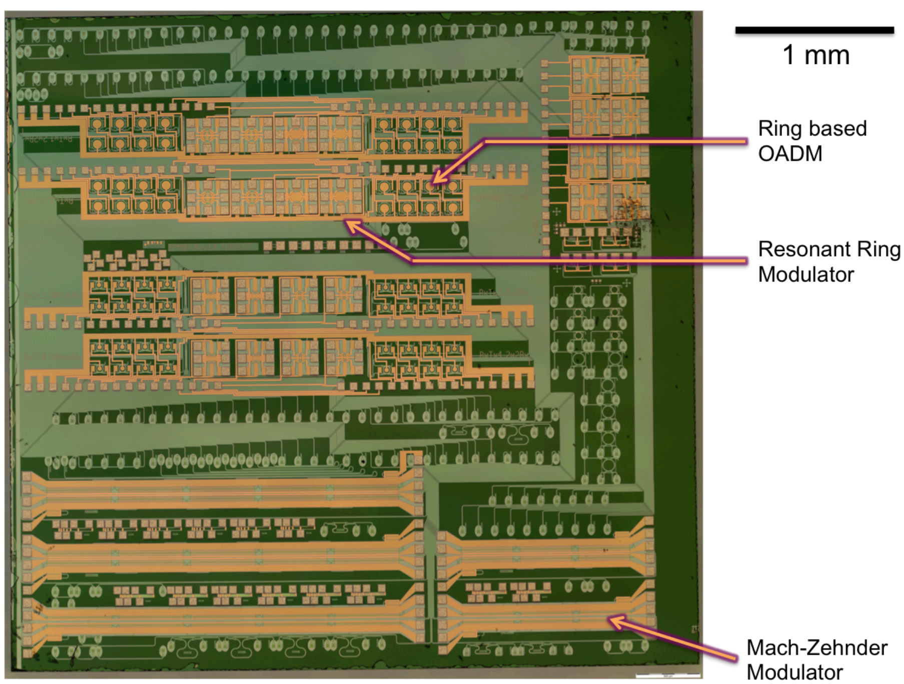

Figure 4: Micrograph of the system chip developed for the COWDM project. The chip comprises transmitters with resonant ring modulator (RRM) arrays, as well as receivers with arrays of ring based optical add drop multiplexers connected to a 90 degree hybrid.