Optical simulations of fiber-to-PIC and fiber-to-fiber connectors

Evgenii Glushkov[(1)], Frederic Zanella[(1)], Roger Krähenbühl[(2)], Mohamed Asbahi[(1)], Ton Offermans[(1)], Guillaume Basset[(1)]
[(1)] CSEM SA, 2002 Neuchâtel, Switzerland, evgenii.glushkov@csem.ch

[(2)] CSEM SA, 4123 Allschwil, Switzerland

Coupling light in and out of photonic integrated circuits (PICs) as well as between optical fibers is known to be challenging due to the tight alignment tolerances, requiring the use of active alignment or beam expansion techniques, which significantly increases the cost of packaging/interconnects. The nanoimprint technology offers an attractive alternative to optimize the costs, and the optical simulations provide necessary guidelines for design and fabrication and serve as a baseline for experimentally measured data. Here, we will review several light coupling techniques we've implemented experimentally using imprinted micro-optical components over the last years, as well as ways of simulating them using the Ansys tools (Zemax Optics Studio, Lumerical).