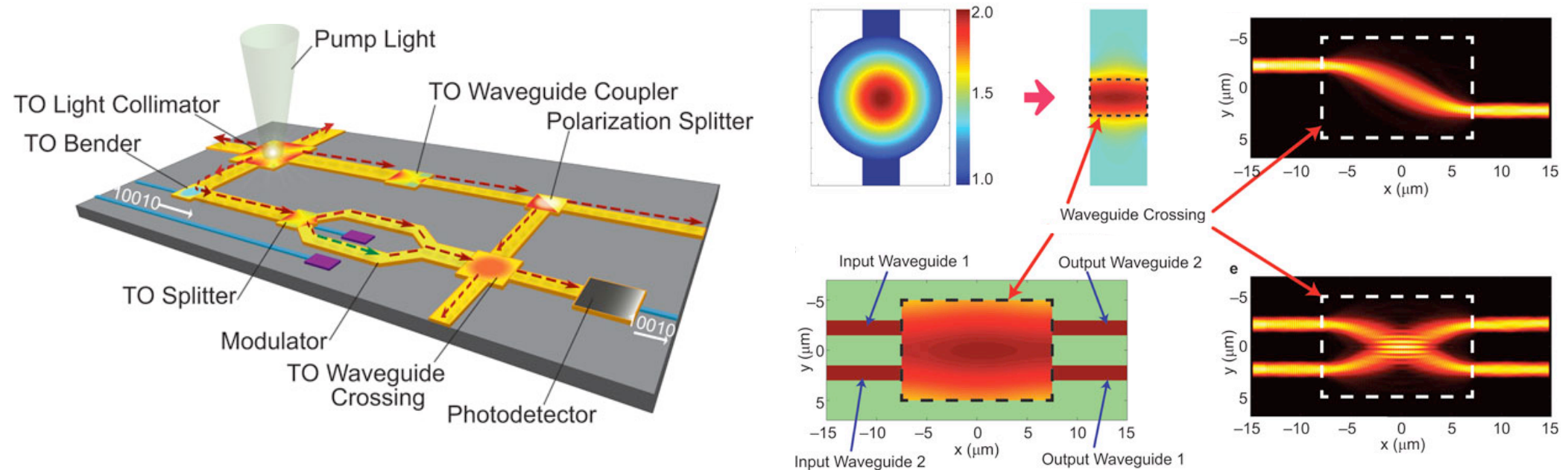


Integrated photonic systems based on transformation optics devices



Using the new tools of metamaterials and transformation optics, MRSEC researchers have developed designs for miniaturized optical devices in chip-based optical integrated circuits, the analog of the integrated electronic circuits in computers and cell phones. A unified theory for designing practical devices on a single platform using transformation optics has been developed. These broadband, lossless all-dielectric-based gradient-index devices designed include beam collimators, beam splitters, waveguide crossings and waveguide couplers. This technique provides a pathway to broadband, low-loss integrated photonic systems: circuits for light.