Nanoimprinted reflecting gratings for long-range surface plasmon polaritons

We present a novel design, fabrication, and characterization of reflecting gratings for long-range surface plasmon polaritons (LR-SPPs) at telecom wavelengths. LR-SPP waveguides consisting of a thin (12 nm) gold film embedded in a thick (45 μm) layer of dielectric polymer cladding are structured by nanoimprint lithography to form a reflecting Bragg grating. By performing spectrally resolved transmission measurements pronounced Bragg grating behaviour is observed, with the transmission dip increasing (up to 12 dB) with the increasing grating length.