

Supplementary information

Coupling and mode profiles of antisymmetric and symmetric modes with different waveguide separation

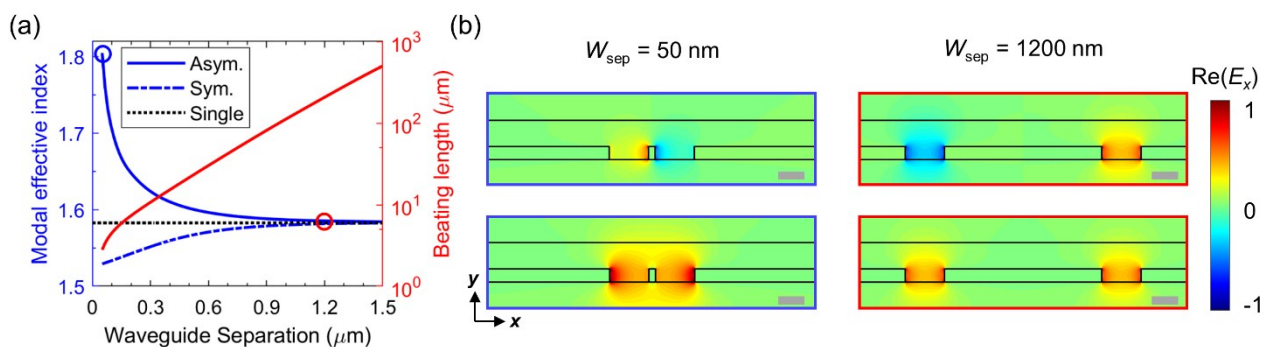


Fig. S1 Coupling and mode profiles of antisymmetric and symmetric modes with different waveguide separations. (a) Modal index and coupling length with respect to varied waveguide separations, the same as in Figure 2d. (b) The modal profiles of parallel transmission systems with closely packed ($W_{\text{sep}} = 50 \text{ nm}$) and largely separately ($W_{\text{sep}} = 1200 \text{ nm}$) slot waveguides. When W_{sep} is small, the antisymmetric mode mimics the fundamental mode supported by a narrow metal strip, leading to a large modal effective index. By contrast, when W_{sep} is large, both modes propagate as the quasi-TEM guiding modes in individual slot waveguides, thereby giving rise to the asymptotic convergence (black dotted line in Figure S1a). The scale bars in represent 100 nm.

Collection of SEM images of investigated plasmonic Mach-Zehnder interferometers

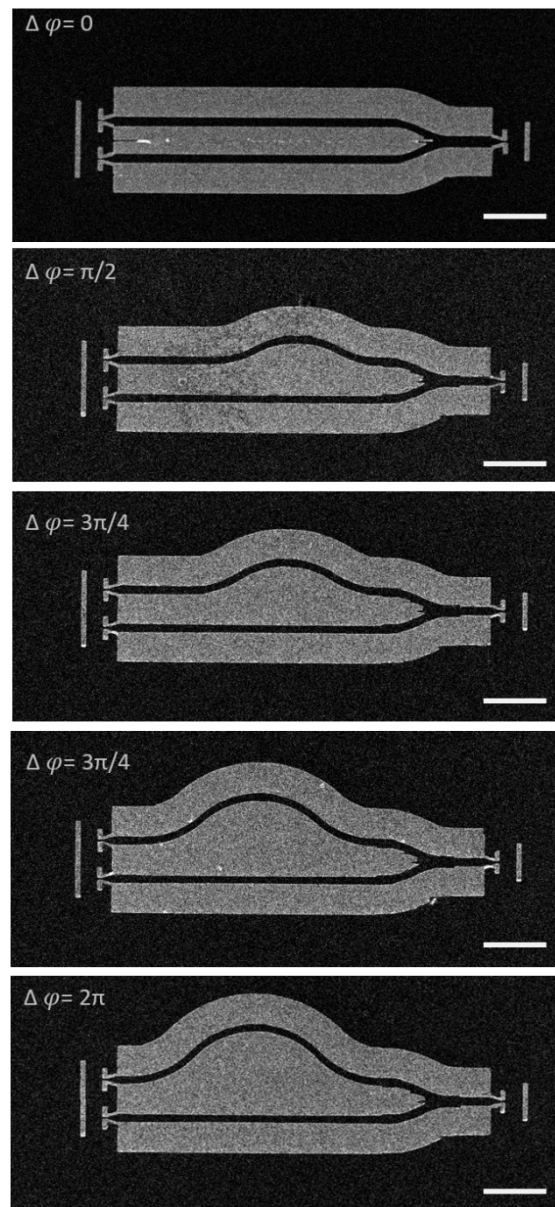


Fig. S2 Collected SEM images of investigated Mach-Zehnder Interferometer with nominal optical phase difference ranging from 0 to 2π . The scale bars represents 2 μm .