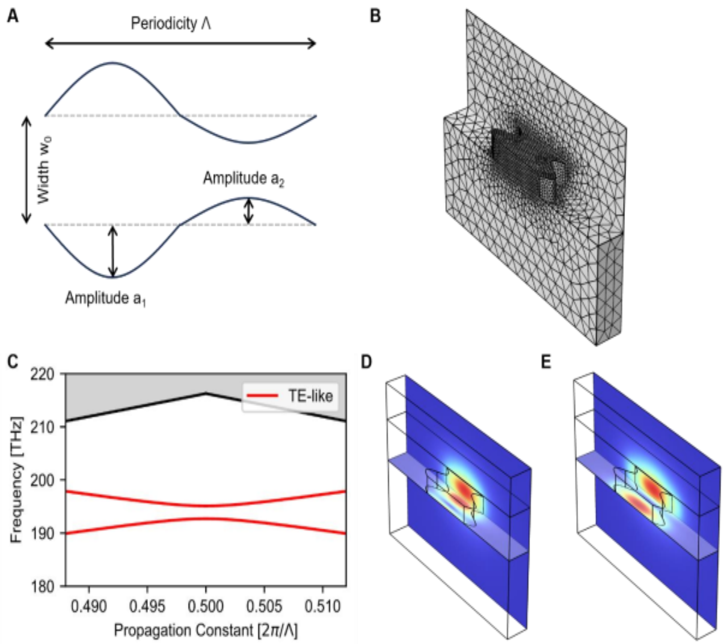

Figure 5 Bragg Grating Design. A, We deploy Comsol's eigenfrequency solver to determine the guided modes within a periodic Bragg grating for a given propagation constant. **B,** We use the adaptable mesh to increase the resolution within the waveguide with respect to surrounding due to the exponentially decreasing field strength. **C,** We compute the band diagram of a Bragg grating with a periodicity of 480 nm for the SiN platform. As designed, the modulation of the waveguide width creates a bandgap for the TE-like ground mode. **D,** The upper band is primarily confined in the thin region of the grating and is referred to as the air band. **E,** The lower band is mainly confined in the thick region of the grating and is referred to as the dielectric band.

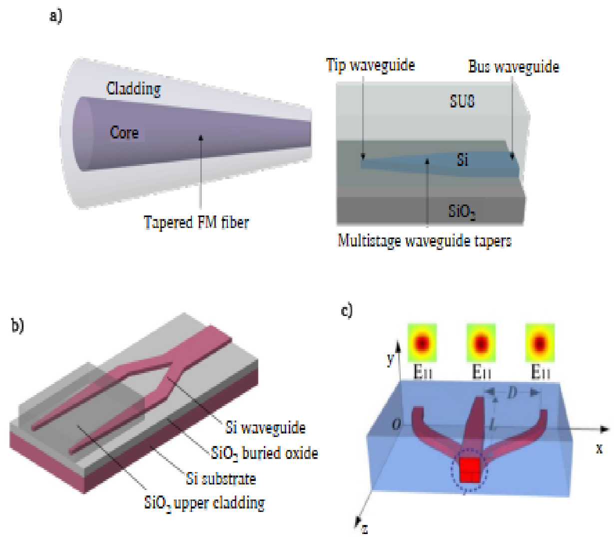

Figure 2.3.: Three edge-coupling tapered structures for FM coupling: a) A tapered waveguide coupling six linear polarization modes into the first three fundamental TE and TM modes with a simulated loss of less than -0.6 dB, adapted from [32]; b) A fork structure targeting the LP_{11a} mode with coupling losses of -3 dB in simulation and -5.5 dB in experiment, adapted from [34]; c) A two-layer fork structure for coupling to multi-core, single-mode fibers, from adapted from [35].

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