

Fabry-Perot fringes from compound cavities for reflection determination in InP planar photonic crystals

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High resolution transmission spectra have been measured of deeply etched InP planar photonic crystals (PhC) intersecting a 2 mm long ridge waveguide. For a PhC block of only 9 row thick high transmission is observed in both dielectric and air band (order 50%), and the average residual transmission in the stopband is up to 10% of the passband level. The residual transmission shows Fabry-Perot (FP) fringes with a maximum to minimum ratio of approximately 70 (see figure 1). These fringes arise from the compound cavity formed by the waveguide end facets and the PhC mirror in between. From this the reflectivity of the PhC could be obtained and was found to be ~ 0.90 . It is concluded that these devices are functional in-plane mirrors with high (adjustable) reflection, corresponding transmission and relatively low loss.

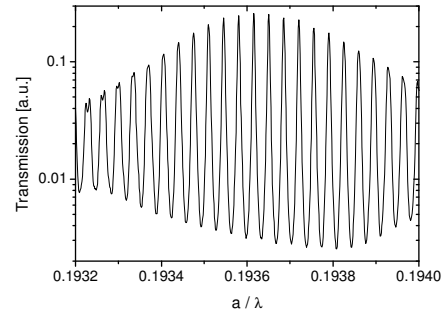


Fig. 1 Fabry-Perot fringes in ΓM stopband transmission. ($a = 299$ nm)