

Abstract Submitted  
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**One Dimensional Photonic Crystals with Semiconducting Constituents: Photonic Bands Near The Polaritonic Gap Edges<sup>1</sup>** JESUS MANZANARES-MARTINEZ, FELIPE RAMOS-MENDIETA, Universidad de Sonora — We have calculated the photonic band structure (PBS) and the optical properties of two periodic layered systems: air/LiTaO<sub>3</sub> and air/InSb. In our calculations the dielectric constant of the semiconductors takes into account the phononic contributions. Intrinsic electron and hole densities are also considered for the InSb. We have found that the PBS presents metallic behavior at frequencies just above the transverse phononic frequency and below the effective plasma frequency. Further the absorption mechanisms give rise to inflexion points in some bands – the curve of dispersion returns without reaching the Brillouin zone limit. An infinite concentration of non-dispersive bands is found below the polaritonic gap when the absorption is neglected. However, with realistic absorption such infinite series of flat bands disappears, giving place to a finite number of dispersive bands.

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