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Narrow bandwidth wavelength filter by guided-mode resonance

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Abstract

We study the realization of simple resonant structures allowing to obtain holographic reflection filters under a 45° incidence for a wavelength of $\lambda = 632.8$ nm. In particular, we will be interested in the influence of the parameters of the structures on the position and the shape of the resonance peaks. The 45° incidence takes its origin in the will to include resonant components in substrate mode systems. In the second part of this paper, we use the obtained results to study the realization of an active substrate mode spectral filter by the use of an eletro-optic material: zinc oxide (ZnO). The presented results which obtained by an algorithm based on the Rigorous Coupled Wave Theory.

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