

Extraordinary Ray Response on LHM and EIT Bi-Layered Medium

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Abstract

A 1D finite layer of periodic (D|E) cells which is composed of a dielectric and typical EIT bi-layered medium is firstly proposed. With a visible light (probe signal) obliquely incident onto the very first interface of this composite material ($n_1=n_D=+3.54$), ray behavior is sensitive to frequency and tunable with control field. Furthermore, by replacing the dielectric with LHM (Left-Handed Material) material ($n_1=-\text{absolute}(n_D)$) an extraordinary ray response is found. Some novel potential applications are finally discussed.

Keyword : EIT material, LHM material, TE/TM mode