Abstracts

A novel nanostructured microstrip device for tunable stopband filtering applications at microwaves

I. Huynen, G. Goglio, D. Vanhoenacker and A. Vander Vorst. "A novel nanostructured microstrip device for tunable stopband filtering applications at microwaves." 1999 Microwave and Guided Wave Letters 9.10 (Oct. 1999 [MGWL]): 401-403.

The authors present a novel microstrip structure using a nanoscale porous substrate filled by a ferromagnetic material, forming an array of nanowires perpendicular to the ground plane. When compared with photonic bandgap structures, the stopband behavior is created here by a gyromagnetic resonance phenomenon in the metallic nanowires. This resonance is tuned by means of a DC magnetic field parallel to the nanowires, in a very good agreement with the gyromagnetic theory. Also, tuning can be achieved over more than one octave, because the nanoscale geometry ensures that fields penetrate into the whole wire area up to 40 GHz. Other advantages are detailed in this work.

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