Abstracts

On the application of the microgenetic algorithm to the design of broad-band microwave absorbers comprising frequency-selective surfaces embedded in multilayered dielectric media

S. Chakravarty, R. Mittra and N.R. Williams. "On the application of the microgenetic algorithm to the design of broad-band microwave absorbers comprising frequency-selective surfaces embedded in multilayered dielectric media." 2001 Transactions on Microwave Theory and Techniques 49.6 (Jun. 2001, Part I [T-MTT]): 1050-1059.

In this paper, we present a procedure for synthesizing broad-band microwave absorbers incorporating frequency-selective surface (FSS) screens embedded in dielectric media using a binary coded genetic algorithm (GA). The GA simultaneously and optimally chooses the material in each layer, thickness of each layer, FSS screen periodicity in the z- and y-directions, its placement within the dielectric composite, and the FSS screen material. Additionally, the GA generates the cell structure of the FSS screen. The result is a multilayer composite that provides maximum absorption of both TE and TM waves for a prescribed range of frequencies and incident angles. This technique automatically places an upper bound on the total thickness of the composite.

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