Abstracts

The electromagnetic properties of re-entrant dielectric honeycombs

F.C. Smith, F. Scarpa and B. Chambers. "The electromagnetic properties of re-entrant dielectric honeycombs." 2000 Microwave and Guided Wave Letters 10.11 (Nov. 2000 [MGWL]): 451-453.

Dielectric honeycombs are cellular materials often used in applications that require structural and electromagnetic characteristics, e.g., in LO (low observable) and radome components. A re-entrant (or auxetic) honeycomb is a cellular material with structural properties that are superior to those of a conventional honeycomb. By employing the finite-difference time-domain (FDTD) technique with periodic boundary conditions, the electromagnetic properties of re-entrant honeycombs are determined and compared to those of a conventional honeycomb. Re-entrant honeycombs are shown to have substantially superior electromagnetic properties. Measured permittivity data are used to substantiate the conclusions based on predicted FDTD data. The use of re-entrant honeycombs, rather than conventional honeycombs, in LO and radome applications can yield improved structural and electromagnetic performance.

❑ Return to main document.