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Development of pyramidal microwave absorber using sugar cane bagasse (SCB)

Abstract

The need to find ways to effectively utilize the large quantities of agricultural waste that are produced is indicative of the huge potential associated with producing an alternative pyramidal microwave absorber for anechoic chamber-testing applications. We propose the development of a pyramidal microwave absorber that can use sugar cane bagasse (SCB), a byproduct from the production and processing of sugar cane, as the absorbent. In this paper, we report the results of our use of dielectric probe measurement to determine the dielectric constant and loss tangent of SCB. These values were used to model and simulate an SCB pyramidal microwave absorber in Computer Simulation Technology's (CST's) Microwave Studio. This absorber was operated in the microwave frequency range between 0.1GHz and 20.0 GHz.

Keywords

Computer simulation technology; Dielectric probe; Loss tangent; Microwave absorbers