

Radar Absorbing Properties of Barium Hexaferrite Accompanying with Cu Powders in Polymer Composite Coatings

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Radar, which is an electronic and electromagnetic system that works with the use of radio waves to detect and locate objects, has led to the need for radar absorber materials for some military applications, especially for defense and security. In this study, barium hexaferrite and copper powders were used to produce radar absorbing composite material. Barium hexaferrite powders were synthesized by Sol-Gel method with hexagonal molecular structure in nano size. Barium hexaferrite and copper powders were added to a polyurethane resin to interpolate the radar absorption at different loading levels to see the concentration dependence. Later, metal surfaces were covered with these polymeric composites. Characterization tests such as particle size analysis, X-Ray Diffraction, Scanning Electron Microscopy (SEM) and scratch test were performed. It was done with a Network Analyzer to determine the electromagnetic properties of copper and barium hexaferrite reinforced composites. It was concluded that the increased amount of copper and barium hexaferrite powder in the composites increased the radar absorption performance. Besides, it was concluded that very good synergistic effects were obtained that Cu powders was significantly influential with barium hexaferrite powders.