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Microwave Absorption Properties of Low Density Polyethelene-Cobalt Ferrite Nanocomposite

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Abstract : Low density polyethylene (LDPE) nanocomposites with 3, 5 and 7 wt. % cobalt ferrite ($CoFe_2O_4$) nanopowder fabricated with extrusion mixing and followed up by hot press to reach compact samples. The transmission/reflection measurements were carried out with a network analyzer in the frequency range of 8-12 GHz. By increasing the percent of $CoFe_2O_4$ nanopowder, reflection loss (S11) increases, while transferring loss (S21) decreases. Reflectivity (R) calculations made using S11 and S21. Increase in percent of $CoFe_2O_4$ nanopowder up to 7 wt. % in composite leaded to higher reflectivity amount, and revealed that increasing the percent of $CoFe_2O_4$ nanopowder up to 7 wt. % leads to further microwave absorption in 8-12 GHz range.

Keywords : nanocomposite, cobalt ferrite, low density polyethylene, microwave absorption
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