Polyaniline and nickel ferrites in polymer based composites for EMI shielding application

Polymer based composites were fabricated using electrically conductive and magnetic particles. Nickel Ferrites (NiFe) and Polyaniline (PANI) were used as magnetic and electrically conductive filler particles respectively. NiFe and PANI were prepared successfully by co-precipitation and chemical oxidative methods and confirmed by the XRD. Maximum of 20 wt% of each filler is used in polystyrene matrix. Solution casting method was used for the fabrication of composite films. Dielectric properties and DC conductivity were first analyzed of prepared composite films. Both DC conductivity and dielectric constant observed to be increased significantly and it gives the indication of enhanced Electromagnetic Interference (EMI) shielding properties of composite film. Vector Network Analyzer (VNA) is used to measure the EMI shielding effectiveness (SE) in microwave region (0.1 GHz to 20 GHz). Pure polystyrene doesn't exhibit any EMI SE with -3 dB SE value. With the addition of both PANI and NiFe, SE value keep on increasing and reached the value of -35 dB in whole microwave range of 0.1 GHz to 20 GHz. SEM was also used to evaluate its microstructure of prepared composite films.

Biography

HM Fayzan Shakir has completed his MS at the age of 25 years from National University of Science and technology, Pakistan and currently enrolled in PhD studies from Northwestern Polytechnical University,Xi'an, China in school of Materials Science and Engineering. He is working as Lecturer in department of Materials, School of Engineering and technology, National Textile University, Pakistan for the past 3 years. He has published more than 25 papers in reputed journals and has been serving as an editorial board member of "Journal of Modern Polymer Chemistry and Materials".

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