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(PANI-PTSA) & $\text{CoFe}_2\text{O}_4/\text{Co}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4$ - Nanocomposite absorption materials prepared for EMI shielding in microwave X-band

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Statement of the Problem: The risk of Electromagnetic Interference (EMI) waves is constantly required to materials work as shielding, which are widely used in various high technology applications such as medical, communications, military. Polyaniline (PANI-PTSA) & Ferromagnetic - Cobalt Ferrite $\{\text{CoFe}_2\text{O}_4\}$ /Cobalt-Zinc ferrite $\{\text{Co}_{0.5}\text{Zn}_{0.5}\text{Fe}_2\text{O}_4\}$ nanocomposites are one of these materials which are mix together to have found a solution for these problems.

Methodology & Theoretical Orientation: Polyaniline doped Para Toluen Sulfic Acid (PANI-PTSA) be set up by substance oxidative polymerization of aniline in aqueous medium with ammonium peroxydisulphate as an oxidant. The sol-gel auto combustion method has been used to synthesis ferrite samples. Nicholson-Ross-Weir (NRW) method was applied to determine the real and imaginary parts of complex relative permittivity ($\epsilon_r' - j\epsilon_r''$) and permeability ($\mu_r' - j\mu_r''$).

Findings: The composite materials showed maximum absorption frequency range reflection loss of CFP was -7.1 dB at 9 GHz and -9.6 dB at 11.2 GHz, while at the same frequency for CZFP was -17.1 dB and -23.7 dB respectively.

Conclusion & Significance: Result indicated that CZFP was the best (> 98% power absorption) than CFP (>50% power absorption).

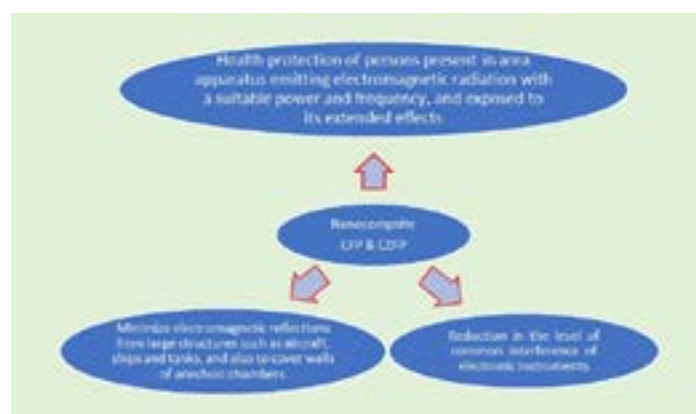


Figure 1, Shows the importance of nanocomposite CFP & CZFP in various field applied.

Biography

Jameel Sulaiman, B.Sc. Physics – 1982, University of Baghdad. M.Sc. Physics – 2005, University of Mosul. PhD Student; since Nov, 2013 at Technology University, Baghdad, may be within two month I get the degree. He has built his expertise during years of hard work in R&D centers in Iraq since (1988-2003), then (2005) in evaluation, teaching and administration both in education institutions at University of Mosul College of Dentistry. He has a number of applied research and published locally and internationally. In addition to my participation in a number of local and international conferences in Turkey, Saudi Arabia, UAE ... as well as a training course in Switzerland.

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