

## عنوان مقاله:

Preparation, characterization and microwave absorbing properties of carbon coated carbonyl iron nanostructure

## محل انتشار:

دومین کنفرانس بین المللی پژوهش در علوم و مهندسی (سال: 1395)

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## خلاصه مقاله:

In this study, the carbonyl iron was coated with carbon via hydrothermal reaction and the microwave absorption properties of the carbon coated carbonyl iron nanostructure (CI/C) was investigated in the range of 8.2-12.4GHz. The structure, characterization and magnetic performances of the prepared nanostructures were characterized by X-ray diffraction (XRD), transmission electron microscope (TEM) and vibrating sample magnetometer (VSM). The microwave properties including complex permittivity ( $\epsilon_r$ ), the permeability ( $\mu_r$ ), dielectric loss, magnetic loss, reflection loss, and attenuation constant were investigated using a vector network analyzer. For CI particles the optimal reflection loss for 4.4 mm thickness was -16.86 dB at the matching frequency of 12.3 GHz. The bandwidth with RL more than -10 dB can be reached in the frequency range of 10.8–12.4 GHz and there was no RL values below -20 dB. While for The CI/C nanostructure, the bandwidth of below-10 dB (90% power absorption) and -20dB (99% power absorption) can be obtained in the frequency range of 9.8–12.4 GHz and 11.0-11.8GHz respectively, As well as, the optimal RL was -46.69 dB at the matching frequency of 11.5GHz, when the matching thickness is 1.3 mm. The results indicate that the existence layer of C coated on CI, enhances the electromagnetic absorbing properties

## کلمات کلیدی:

Carbon coated carbonyl iron nanostructure, Microwave absorption properties, Hydrothermal reaction, Reflection loss

## لینک ثابت مقاله در پایگاه سیویلیکا:

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