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Porous coin-like Fe@MoS₂ composite with optimized impedance matching for efficient microwave absorption

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Abstract Magnetic metallic materials compounded with dielectric loss materials are promising for efficient microwave absorption as a result of the synergistic effect between dielectric loss and magnetic loss, as well as the optimized impedance matching. In this paper, porous coin-like structured Fe@MoS₂ composite has been fabricated via solvothermal method accompanied by subsequent heat treatment under H₂/Ar atmosphere. The structure and morphology of as-prepared Fe@MoS₂ composite indicates that MoS₂ nanosheets with the two-dimensional (2D) structure are well dispersed on the porous coin-like Fe micro-sheets to form a core-shell structure. Particularly, the addition of MoS₂ regulates the permittivity as well as improves the impedance matching of the Fe@MoS₂ composite. The as-prepared composite shows efficient microwave absorption properties with the maximum effective absorption

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