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Hexagonal Co/C/$BaZn_{0.2}Co_{0.8}TiFe_{10}O_{19}$ ternary hybrids: synthetic method and microwave absorption properties

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ABSTRACT: Through a simple method, hexagonal Co/C/$BaZn_{0.2}Co_{0.8}TiFe_{10}O_{19}$ ternary hybrids have been successfully prepared. The method can be used to prepare a variety of metal/ferrite. The saturation magnetization value gradually decreases with increasing content of $BaZn_{0.2}Co_{0.8}TiFe_{10}O_{19}$ (BZCTM). The coercivity value relates to particle size and content of BZCTM. The μ''-μ' (μ' and μ'' is the real and imaginary part of permeability respectively) curve can be used to infer the magnetic loss. For the materials mainly with magnetic loss, it can be used to infer the reflection loss. With d=1.9 mm, the reflection loss (*RL*) of S1 (containing 0.1 g BZCTM) achieves minimum (-47.23 dB) at 9.95 GHz. For S4 (containing 0.7 g BZCTM), the bandwidth of *RL* below -10 dB is from 11 to 17.82 GHz (d=1.9 mm). What's more, the μ″-μ′ curve can indicate the direction to improve magnetic loss, which is significance for