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# Hexagonal Co/C/BaZn<sub>0.2</sub>Co<sub>0.8</sub>TiFe<sub>10</sub>O<sub>19</sub> ternary hybrids: synthetic method and microwave absorption properties

Wenjia Xing<sup>a,b</sup>, Hua Wang<sup>a,b</sup>, Qingbo Fan<sup>a,b</sup>, Jing Chen<sup>a,b</sup>, Wei Sang<sup>b</sup>, Qin Lei<sup>a,b</sup>,

Guangliang Xu<sup>a,b,\*</sup>

<sup>a</sup>*State Key Laboratory of Environmental Friendly Energy Materials, Southwest*

*University of Science and Technology, Mianyang 621010, P. R. China*

<sup>b</sup>*School of Materials Science and Engineering, Southwest University of Science and*

*Technology, Mianyang 621010, P. R. China*

\*Corresponding author. Tel: +86-0816-6089150,

Email: xuguangliangswust@163.com

**ABSTRACT:** Through a simple method, hexagonal Co/C/BaZn<sub>0.2</sub>Co<sub>0.8</sub>TiFe<sub>10</sub>O<sub>19</sub> 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<sub>0.2</sub>Co<sub>0.8</sub>TiFe<sub>10</sub>O<sub>19</sub> (BZCTM). The coercivity value relates to particle size and content of BZCTM. The  $\mu''$ - $\mu'$  ( $\mu'$  and  $\mu''$  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  $\mu''$ - $\mu'$  curve can indicate the direction to improve magnetic loss, which is significance for

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