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## 生物质碳钡铁氧体纳米复合材料吸波性能研究

**摘要：**生物质碳钡铁氧体复合材料具有独特的物理性能，它是目前广泛应用的一种微波吸收材料，具有很强的吸收特性，并以其优良的频响特性成为近年来研究的热点。本实验以紫菜作为碳源，用共沉淀法制备钡铁氧体，通过氢氧化钾活化碳化法制备生物质碳材料，研究了钡铁氧体含量变化对吸波材料的电磁参数以及吸波性能的影响，确定了二者复合的组成比例，分析了吸波机理。采用 X 射线衍射(XRD)和扫描电镜(SEM)等仪器对其形貌和表征进行了分析，并对测试了其吸波性能。

研究表明：

- (1) 当钡铁氧体和 C: Na=1:8 时的三维碳的质量比为 1/20 时，吸波性能并不好，最大 RL 仅为 2.30 dB；
- (2) 当钡铁氧体和 C: Na=1:4 时的三维碳质量比为 1/10 时，吸波性能依旧不好，最大 RL 仅为 0.89 dB；

**关键词：**生物质碳；钡铁氧体；复合材料；吸波性

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## Study on wave absorbing properties of biomass barium carbon ferrite nanocomposites

**Abstract:** Biomass carbon-barium ferrite composite material has unique physical properties. It is a kind of microwave absorbing material widely used at present. It has strong absorption properties and has become a research hotspot in recent years due to its excellent frequency response properties. In this experiment, barium ferrite was prepared by coprecipitation method using nori as carbon source, and biomass carbon material was prepared by activated carbonization method using potassium hydroxide. The influence of the change of barium ferrite content on the electromagnetic parameters and absorbing properties of the absorbing material was studied, the composition ratio of the two compounds was determined, and the absorbing mechanism was analyzed. Its morphology and characterization were analyzed by means of X-ray diffraction (XRD) and scanning electron microscope (SEM), and its wave absorbing properties were tested.

The results show that:

(1) when the mass ratio of three-dimensional carbon between barium ferrite and C: Na=1:8 is 1/20, the absorption performance is not good, and the maximum RL is only 2.30 dB.

(2) when the three-dimensional carbon mass ratio between barium ferrite and C: Na=1:4 is 1/10, the absorption performance is still poor, and the maximum RL is only 0.89db;

**Key words:** Biomass carbon; barium ferrite; composite material; absorbing property

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