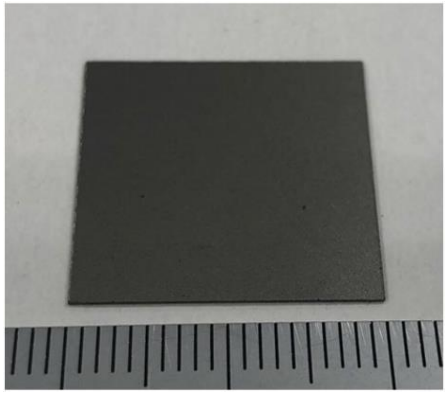
Tohoku Univ. Technology

Rare earth free electromagnetic wave absorber for 5G

Electromagnetic wave absorber with good noise suppression above 10GHz

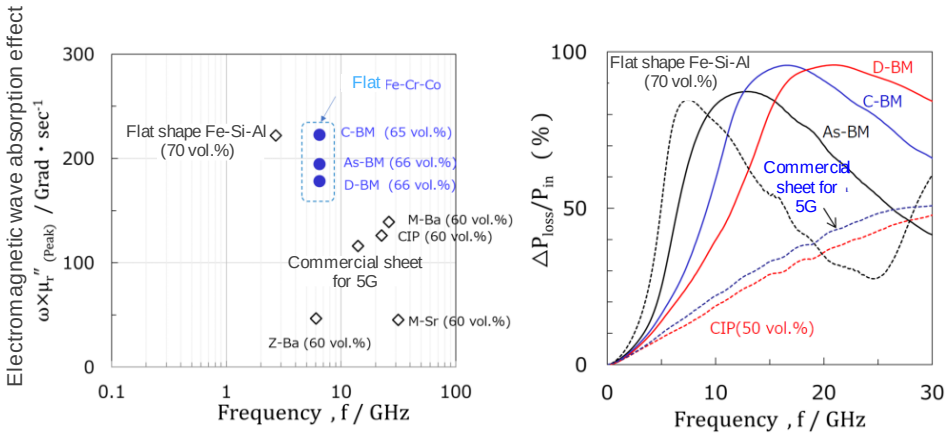


Overview

With the increase of IoT device and the spread of 5G, noise electromagnetic wave emitted from device integrated transmission circuit has become a serious problem. Since the frequency of these noise electromagnetic wave is around 3GHz, it is required to develop an electromagnetic wave absorber that is efficient in 10^0-10^1GHz range. Currently, electromagnetic wave absorber made by mixing flat powder of FeSiAl alloy with resin is in practical use, but the absorption band (resonance frequency) is limited to MHz order.

This invention is about an electromagnetic wave absorber that achieves an absorption from 3 to 12GHz band, with excellent noise suppression above 10GHz, based on the approach of shape magnetic anisotropy improvement. The large shape magnetic anisotropy is achieved by using FeCoCr alloy with a large two phase separation structure. As shown in right figure, electromagnetic wave absorption capacity and transmission attenuation ratio are twice of noise suppression sheet for 5G which is commercially available. Moreover, this electromagnetic wave absorber is useful from economic security viewpoint because it does not contain rare earth element.

Features･Outstandings



Product Application

- Electromagnetic wave absorbing material
- Noise suppression sheet for 5G (SHF band)

Related Works

1.Tohoku University, 2023 | Press Release, Research results, "Development of electromagnetic wave absorbing material for 5G mobile communication system - High performance realization with rare earth-free Fe-based magnet alloy -"
2. J. Alloy. Compd. 903, 2022, 163920.
3. J. Magn. Magn. Mater. 564, 2022, 170200.

IP Data

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