

## Enhanced Microwave Absorption Quality of Bio-Silica-Barium-Ferrite Composites: Interplay of Fe<sup>3+</sup> and Si<sup>4+</sup>

<b>Title</b>	Enhanced Microwave Absorption Quality of Bio-Silica-Barium-Ferrite Composites: Interplay of Fe <sup>3+</sup> and Si <sup>4+</sup>
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<b>Abstract</b>	This paper reports the improved microwave (MW) absorption characteristics of some newly prepared bio-silica-barium-ferrite composites (SBFCs) of the form (x)Bio-SiO <sub>2</sub> :(80-x)Fe <sub>2</sub> O <sub>3</sub> :(20)BaO (where x = 0, 2, and 4 wt.%). These composites were prepared using the modified solid-state reaction method with simultaneous sintering at 800 and 1100 Å, Å°C. SBFCs were studied to determine the impact of various bio-silica concentrations on their morphology, structure, magnetic properties, permittivity, permeability, and X-band reflection loss. Various SBFC thicknesses were simulated to determine the reflection loss curves. It has been established that the MW absorption capacity of the examined SBFCs may be altered by adjusting the bio-silica concentration and sample thickness.
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