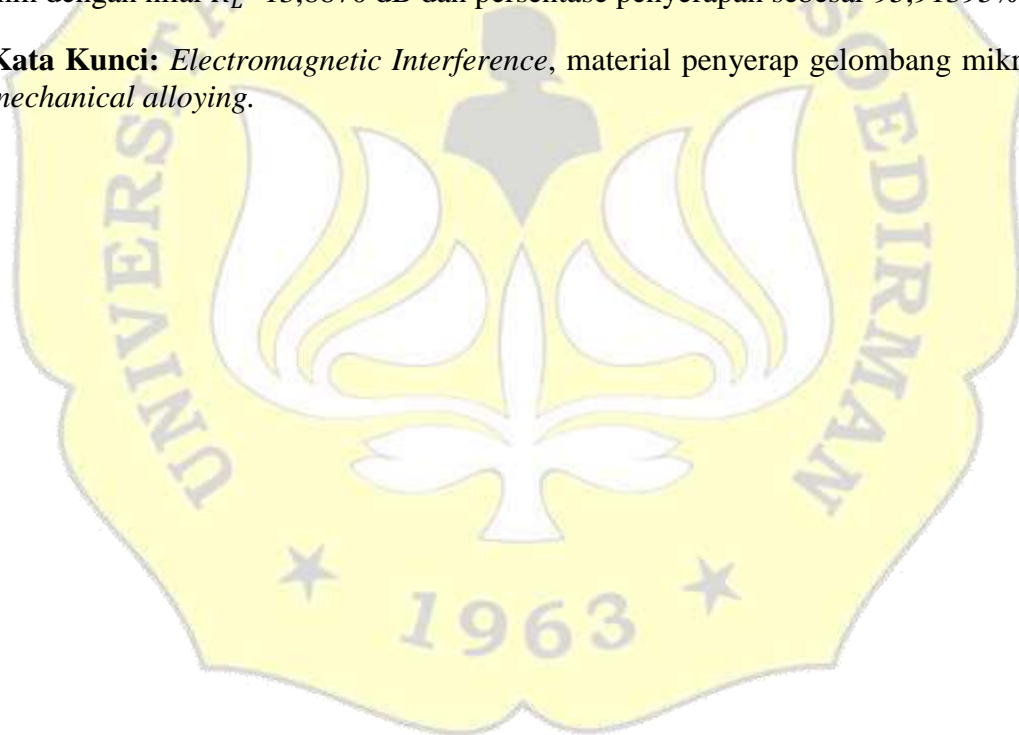


ABSTRAK

Electromagnetic Interference (EMI) dapat menyebabkan terganggunya kinerja alat-alat yang menggunakan gelombang mikro, sehingga banyak dilakukan penelitian mengenai material penyerap gelombang mikro sebagai solusi dalam menanggulangi efek dari EMI. Penelitian ini bertujuan untuk membuat material penyerap gelombang mikro Barium Ferit dengan doping Cerium serta mengetahui karakteristik penyerapan gelombang mikro. Material komposit CeBF dibuat menggunakan metode *Mechanical Alloying* dengan sintering pada temperatur 800 °C dan dilakukan variasi ketebalan 1, 2, 3, 4, dan 5 mm. Dilakukan karakterisasi XRD, VSM, dan VNA. Hasil karakterisasi XRD menunjukkan bahwa terdapat tiga fasa kristal pada material CeBF yaitu BaCeO₃, BaFe₂O₄, dan BaFeO_{2,9} dengan struktur kristal *orthorombic* dan *hexagonal*. Hasil karakterisasi VSM menunjukkan material komposit CeBF bersifat *soft magnetik* dan termasuk ke dalam bahan superparamagnetik, sedangkan hasil karakterisasi VNA menunjukkan daerah penyerapan gelombang mikro terlebar dihasilkan oleh sampel dengan ketebalan 4 mm dengan nilai R_L -13,8870 dB dan persentase penyerapan sebesar 95,91395%.

Kata Kunci: *Electromagnetic Interference*, material penyerap gelombang mikro, *mechanical alloying*.



ABSTRACT

Electromagnetic Interference (EMI) can cause disruption of the performance of devices that use microwaves, so there is a lot of research on microwave absorbing materials as a solution to overcome the effects of EMI. This study aims to make Barium Ferrite microwave absorbing material with doping Cerium and determine the characteristics of microwave absorption. CeBF composite material was made using the Mechanical Alloying method with sintering at a temperature of 800 °C and thickness variations of 1, 2, 3, 4, and 5 mm were carried out. XRD, VSM, and VNA characterization were performed. The XRD characterization results showed that there were three crystalline phases in the CeBF material, namely BaCeO₃, BaFe₂O₄, and BaFeO_{2,9} with orthorombic and hexagonal crystal structures. The results of the VSM characterization showed that the CeBF composite material was soft magnetic and included in the superparamagnetic material, while the results of the VNA characterization showed that the widest microwave absorption area was produced by samples with a thickness of 4 mm with a value of R_L -13.8870 dB and an absorption percentage of 95.91395%.

Keywords: *Electromagnetic Interference, microwave absorbent material, mechanical alloying.*

