Low temperature sintering, densification and microstructure of Co_2Z ferrite substrate with Bi_2O_3 additive for cellular mobile antennas

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Abstract

The Z-type ferrite with composition of $Ba_3Co_2Fe_{24}O_{41}$ + x wt.% Bi_2O_3 (0 & 1) were prepared by conventional oxide cermaic method. X-ray diffraction patterns confirmed single Z-type phase with x = 0 & 1 wt % Bi_2O_3. All peaks were indexed with ICDD card no 190097. The SEM micrograph of Bi_2O_3 showed grain size reduced compared to pure sample. The low liquid phase of Bi_2O_3 (800℃) reacted to hexaferrite particales on the surface of garin [1]. The morphology of grain improved with reducing pores and increasing dencification phenomena. The refined grain size microstructure was associated with low losses [2,3]. The Bi_2O_3 degraded the generation of Fe^{2+} and improved cut off frequency and quality factor [4]. Scintifically, low sintering additive Bi_2O_3 with Z-type hexaferrite substrate can be applicable in the fabrication of miniaturized cellular mobile antennas [5,6].

References

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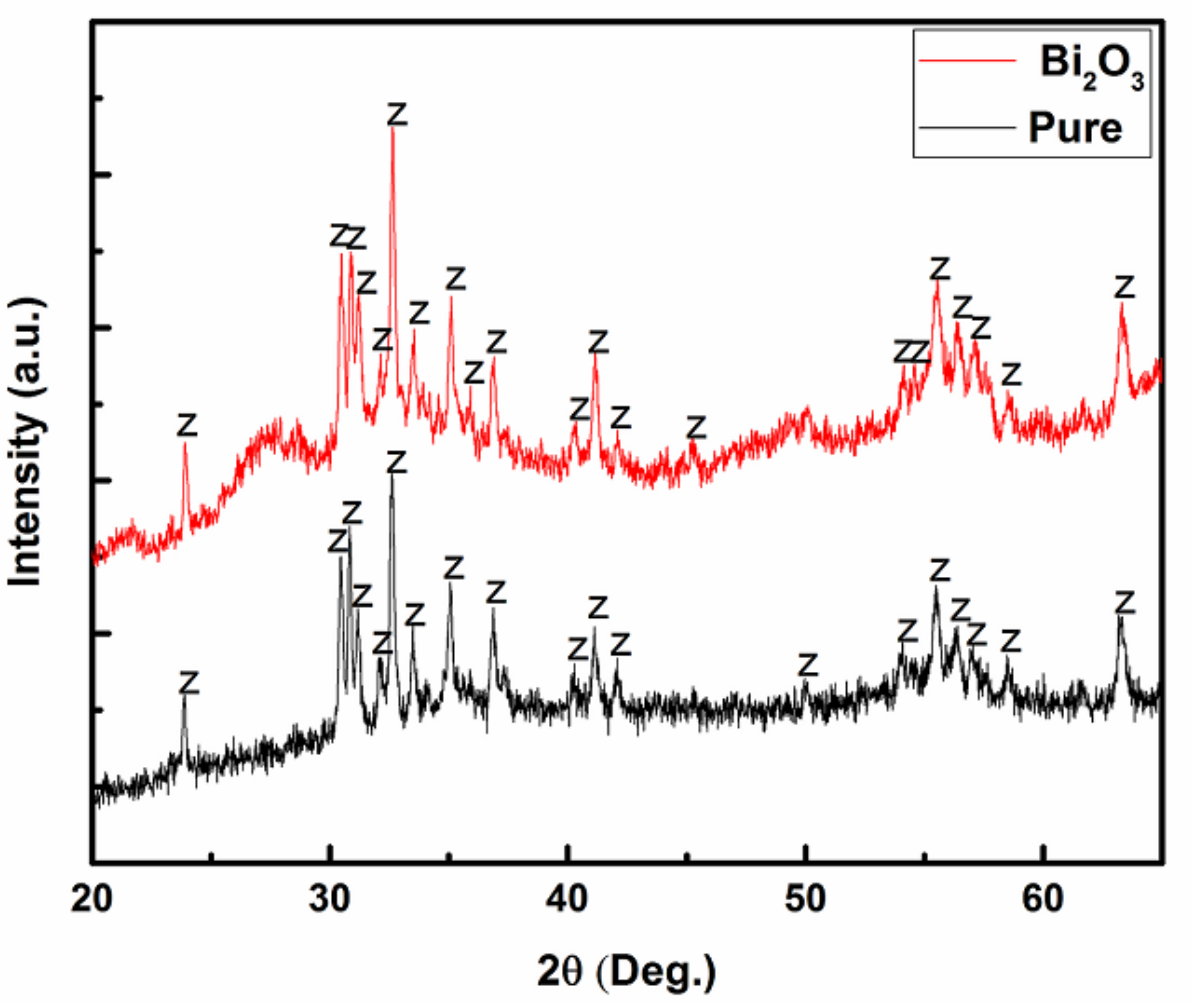


Fig.1 X-ray diffraction patterns of Z-type hexaferrite with Bi_2O_3 (x=0 and 1 wt%).

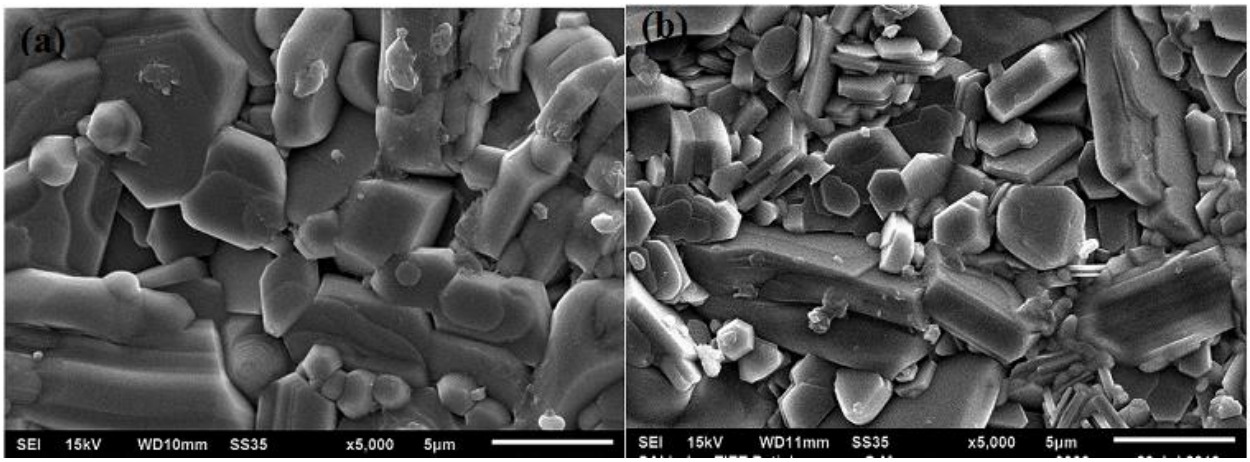


Fig.2 SEM micrographs of (a). Pure and (b). 1wt.% Bi_2O_3.

Biography

Anoop Pratap Singh has experiences of XRD diffraction, SEM, VSM and VNA. He ables to frabricate and design antenna on hexaferrite substrate. He has goldmedalist in Material Sciences and Metallurgical Engineering in his Master of Techniology. He has also Master of Science in Electronics and Communication (Physics). In present time, he is working as Serior Research Fellow under the Deity Scholarship, Government of India.