Studies on Bi\textsubscript{2}Mn\textsubscript{4}O\textsubscript{10} and it’s Chromium and Cobalt doped series

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Bi\textsubscript{2}Mn\textsubscript{4}O\textsubscript{10} was synthesized using organic precursor based glycerin nitrate method. In this method, the precursor prepared from corresponding metal salts in glycerin was calcined at various temperatures (300 – 800 °C) for about 18 hours to determine the synthesis temperature of the formation of Bi\textsubscript{2}Mn\textsubscript{4}O\textsubscript{10}. The XRD data of the calcined specimens reveals that the expected mullite type phase starts to form at 600 °C which becomes more crystalline with further increase in calcination temperature. Attempts were also made to prepare chromium and cobalt doped bismuth manganate with nominal composition Bi\textsubscript{2}M\textsubscript{x}Mn\textsubscript{4-x}O\textsubscript{10} (M = Cr & Co ; 0 ≤ x ≤ 2.0) by the same method. The XRD patterns of this series show mullite type single phase up to x = 1.0 composition. For further increase in x, an unknown phase appears along with mullite type phase, which could not be indexed yet.

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