

Study of microscopic and thermal properties of iron-based powders obtained by high-energy ball milling of Calamine

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Abstract : Abstract: This study was carried out with an intention to prepare iron-based powders from metallurgy industry waste called Calamine. The latter consists of oxides scale formed on the surface of hot rolled steel. The mechanical alloying process used in this work is high-energy planetary ball mill. Morphological and thermal shifts of the milled oxides scale powders were characterized by optical microscopy, scanning electron microscopy (SEM), thermogravimetric analysis (TGA) and differential thermal analysis (DTA). The results showed that the oxide scale contains more than 98% of iron.

Keywords : calamine, iron-based powders, mechanical alloying scanning electron microscopy, thermal analysis