

Solid State Science and Technology, Vol. 19, No 1 (2011) 15-19

ISSN 0128-7389

SYNTHESIS OF MgB₂ FROM MgB₄ THROUGH COMBINATORIAL SOLID STATE REACTION ROUTES

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ABSTRACT

MgB₄ was first prepared from the elemental magnesium and boron powders, followed by acid-washed in order to remove the primary impurity of MgO. In the second step, appropriate amount of Mg was added into the MgB₄ powders and sintered in the temperature range of 650°C to 950°C for 8 hours. XRD spectra showed that MgB₂ appeared as the main phase. The relative intensity fraction for MgB₂ was found to decrease while this value was increased for MgB₄ and MgO upon increasing the sintering temperature. Scanning electron microscopy showed a denser microstructure compared to samples prepared by direct in-situ reaction of (Mg + 2B). The density was found to decrease with increasing sintering temperature possibly due to the loss of Mg.

<http://journal.masshp.net/wp-content/uploads/Journal/2011/Jilid%201/K.%20L.%20Tan%2015-19.pdf>

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