Characterization of the High Energy Milled Precursor Powders in the Synthesis of MgB_2 Superconductor

J . H . Lee [a], S . Y . Shin [a], C. J. Kim [b] , H . W . Park [a]
[a] *Korea University of Technology and Education, cheonan, Korea*
[b] *Korea Institute of Energy Reseach, daejeon, Korea*

We characterized the highly refined precursor powders which was attrition milled for various periods. MgB2 powder precursor was formed from elemental crystalline Mg and amorphous B powder. The microstructure was investigated by SEM, SEM results indicate that the size of the milled powders reduced with increasing milling time. We also studied thermal behaviors of the starting precursor by DSC as a function of milling periods which were varied from 1 to 8 hours. DSC peaks indicated that the thermal behavior of the powder precursors influenced by milling time. In order to determine the thermal events at DSC peaks, we annealed the milled powder mixture under protective gas and then analyzed the formation of MgB_2 by XRD

Keywords : high energy mill, precursor powder, synthesis of MgB2, superconductor