

In-situ Growth of MgB_2 Thin Film by Hybrid Physical-Chemical Vapor Deposition

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We have fabricated high-quality MgB_2 thin films at substrate temperatures of 700-750°C by HPCVD (Hybrid Physical-Chemical Vapor Deposition) technique. Mg pellet and B_2H_6 gas were used as source substances. A film-deposition rate was strongly depends on the substrate temperature and the concentration of B_2H_6 in an inlet gas mixture. Very high growth rate of 600Å/min was obtained at a total reactor pressure of 200 Torr with a mixture gas of 2.5% in H_2 . As grown MgB_2 thin films on Al_2O_3 were investigated by a scanning electron microscopy and a high-resolution transmission electron microscopy.

Keywords : MgB_2 , thin film, SEM, HR-TEM, HPCVD