

Development of Co-B catalyst for hydrogen production using a Ni foam support

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Structural characteristics of Co-B on/into nickel foam support and the influence of heat treatment on the generation of hydrogen from sodium borohydride (NaBH_4) solution were reported. Analyzing morphological and structural observations such as SEM, XRD, XPS, BET, PSD, TG/DSC, FT-IR and ICP, amorphous Co-B structure prepared by simple dipping reduction method was maintained by the calcination temperature of around 250°C. Amorphous Co-B structure was changed into crystalline one above 300°C. With temperature control of batch-type reactor at 40°C, maximum hydrogen generation rate of 7300 ml/min • g was observed on a Co-B/Ni foam catalyst treated at 250°C and it is about 50% higher than as-made Co-B catalyst and crystalline Co-B/Co metal structure formed above 300°C.