Nanocrystalline $TiCo_xMg_{1-x}$ Materials as Hydrogen Storage Alloys

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Mechanical alloying process was used to synthesize nanocrystalline $TiCo_xMg_{1-x}$ materials as hydrogen storage alloys. It was performed using a SPEX 8000 Mixer mill under an argon atmosphere. The purity of the starting metallic elements Ti, Co and Ni was 99.9 wt%, respectively. The elemental powders were in followed range of scale; Ti: ≤45μm; Co: ≤15μm; Mg: 5-10 μm.

Effects of the chemical composition of the nanocrystalline $TiCo_xMg_{1-x}$ alloy with alkaline solution were interestingly investigated in this work. The electrochemical performances of sealed Ni-MH batteries using nanocrystalline $TiCo_xMg_{1-x}$ alloys were compared with that of TiNi alloy, as well.