STUDIES OF LAVES PHASE HYDRIDES UNDER VERY HIGH HYDROSTATIC PRESSURES

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During last 20 years mostly hydrides of pure metals were investigated under high hydrostatic pressure. After (very likely) the first experiments on Bridgman anvil apparatus and cubic press apparatus [1-3] the application of DAC allowed to measure the equation of state and to find several structural changes in alkaline metal hydrides [4-6]. Equation of state for several transition metal hydrides [7-8] and manganese hydride [9] were also reported. In manganese hydride the *fcc-hcp* phase transition was found at 8 GPa.

Surprisingly, in spite of great interest with respect to the hydrides of intermetallic compounds the data about pressure dependence of their molar volume are very limited.

In this work the compressibility behavior of series of Laves phase hydrides, mostly those recently synthesized under high hydrogen pressure [10, 11], has been investigated by using DAC up to 30 GPa. Comparison of parameters of the equation of state (EOS) for several AFe_2 (where A represents Zr, Y or rare earth) and YMn_2 based hydrides and deuterides is presented and discussed. Almost in all hydrides (deuterides) investigated the pressure-induced phase transitions were found. The structural parameters of new high-pressure phase are given and their stability is discussed.

It was revealed that in contrast to AFe_2 based hydrides the YMn_2 parent compound as well as its hydrides have unusually high compressibility.

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