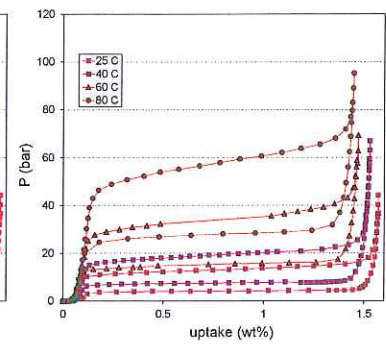
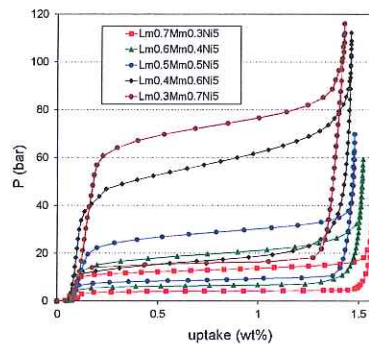




Investigation of the hydrogen storage properties of (La-Ce)Ni₅ type alloys and their composites

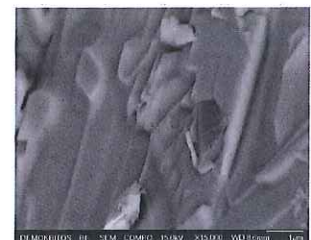
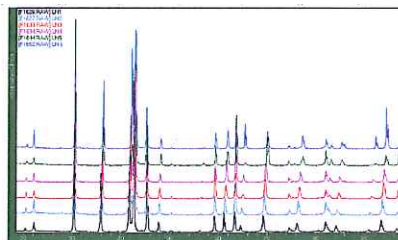
AB5 type intermetallics have been widely studied for different energy applications due to the appealing properties of the respective hydrides. The hydriding/dehydriding reaction is affected by the crystal structure of the alloys, while the introduction of small amounts of elements such as Al, Mn, Zn, Cr, Fe, Cu, Co, etc. in the crystal lattice can significantly improve the hydrogen absorption behavior of the material. In this context, a series of La_{1-x}Ce_xNi₅ (x=0-0.8) alloys have been examined in order to investigate possible the effect of the partial substitution of La with Ce incorporation in the structure and hydrogen storage properties of LaNi₅.

HYSORB facility NCSR "Demokritos" Athens – Greece



Lm = La-rich Misch metal (approx. 80% La + 20% Ce)
Mm = Ce-rich Misch metal (approx. 20% La + 80% Ce)
Dm = Nd,Pr-rich metal (approx. 80% Nd + 20% Pr)
Ni = Ni-rich metal (approx. 95% Ni + 5% Fe)

Lm_{0.7}Mm_{0.3}Ni₅



- ✓ The characteristic microstructure of the original LaNi₅ alloy was maintained, however the incorporation of Ce led to the contraction of the unit cell
- ✓ The increase of the Ce concentration in the La_{1-x}Ce_xNi₅ series led to larger hydrogen absorption and plateau pressures.

The experiment was performed in the HYSORB facility of the National Center for Scientific Research "Demokritos" located in Athens-Greece, with the partial support by the EC FP7-INFRASTRUCTURES project H2FC (GA No. 284522), "Integrating European Infrastructure to support science and development of Hydrogen-and Fuel Cell Technologies towards European Strategy for Sustainable, Competitive and Secure Energy" - User Project 2002 (ME Dept., F.U. - Cyprus).

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