Composite materials for hydrogen storage

Fe-Ti

DESCRIPTION: Nanocristalline powdery material obtained by mechanical alloying through balls milling or atritor, in controlled atmosphere.

TECHNICAL CHARACTERISTICS

- Composition: FeTi with different dopants: Zr, V, Mn
- Particles size: 20 – 500 nm
- Storage capacity: 1.6 % H_2 in weight
- Storage temperature: room temperature
- Storage pressure: < 20 Barr

$LaNi_5$

DESCRIPTION: Powdery material obtained by induction melting process and milled in a mill with controlled atmosphere.

TECHNICAL CHARACTERISTICS

- Composition: $LaNi_2$ with different dopants: Sn, Al
- Storage capacity: 1.5 % H_2 in weight
- Storage temperature: room temperature
- Storage pressure: < 20 Barr

Mg-Ni

DESCRIPTION: Nanocristalline powdery material obtained by mechanical alloying through balls milling or atritor, in controlled atmosphere.

TECHNICAL CHARACTERISTICS

- Composition: Mg_2Ni with different dopants: TiO_2, V_2O_5, Nb_2O_5
- Particles size: 20 – 500 nm
- Storage capacity: 3.6 % H_2 in weight
- Storage temperature: > 250°C
- Storage pressure: < 30 Barr

Zr-Ni

DESCRIPTION: Nanocristalline powdery material obtained by mechanical alloying through balls milling or atritor, in controlled atmosphere.

TECHNICAL CHARACTERISTICS

- Composition: $ZrNi_2$ with different dopants: Ti, Cr, Mn, V
- Particles size: 20 – 500 nm
- Storage capacity: 1.9 % H_2 in weight
- Storage temperature: room temperature
- Storage pressure: < 20 Barr

APPLICATIONS

The hydrogen storage as metallic hydride, with minimum volume and in maximum security conditions is used for applications in the field of hydrogen tanks to supply fuel cells or other independent energy sources.

SOCIO-ECONOMIC AND ENVIRONMENT EFFECTS

- Economic solution of storage by using of some cheap materials and with hydrogen absorption at room temperature
- development of ecologic auto, supplied with hydrogen, clean, plentiful and inexhaustible energy source; by its burning, results only water vapour which not pollute the atmosphere