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Hydrogen storage characteristics of nanostructured $\text{La}_{0.75}\text{Ce}_{0.25}\text{Ni}_5$ alloy grinded by sonication process

Shrok Allami and Mutawer Redah

Ministry of Science and Technology, Iraq

$\text{La}_{0.75}\text{Ce}_{0.25}\text{Ni}_5$ alloy was purchased from Whole Win (Beijing) Materials Sci and Tech. com., Ltd. The nanocrystalline alloy was obtained by grinding the alloy powder in sonicator under different periods. Particle size distribution, surface morphology and structure were studied by laser diffraction, SEM and XRD respectively. The surface area measured by BTU method. The hydrogen storage properties were examined by PCT measurement. The enthalpy (ΔH) and entropy (ΔS) of the alloy indicate that the thermodynamic performance of the nanocrystalline alloy is improved by increasing surface area and diffusion ability of hydrogen in the nanocrystalline microstructure. Short diffusion path of hydrogen in the nanocrystalline microstructure, resulting in better overall hydrogen storage properties, improved the hydrogenation-dehydrogenation reactions of the nanocrystalline alloy. The obtained hydrogen storage capacity was 4.23% (mass fraction), and the amount of hydrogen desorption was 3.74%.

Biography

Shrok Allami is a scientific researcher in ministry of science and technology/ renewable energy directory/ department of hydrogen and biofuel. She has completed her PhD at 2007 from University Technology, Iraq. She has published more than 25 papers in reputed journals, participates at more than 16 national and international conferences as researcher and at their committees, and has been serving as an editorial board member in Iraqi scientific journals.

shrokabdullah@yahoo.com

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