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A Method for Numerical Expressions of *P-C* Isotherms of Hydrogen-Absorbing Alloys*

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A method of numerically expressing the *P-C* isotherms for the α and β phases in a hydrogen solution model was combined with the sloping plateau of a Gaussian distribution model.

Application of this method to $LaNi_{4.55}Al_{0.45}$ resulted in complete agreement between calculated isotherms and measured isotherms within the limits of an experimental error.

1. Introduction

Heat pumps using hydrogen-absorbing alloys [1–3] have gained significant importance from an environmental standpoint. Numerical expressions for the *P-C* isotherms are useful for developing high-performance alloys and systems.

Two types of studies have been conducted in this field. The first tape is based on the regular interstitial hydrogen solution model and has been applied mainly to Pd-H systems [4–5]. The model gives physical meanings for interpretation of the equilibrium characteristics of metal-hydrogen systems, although it does not express the sloping plateau regions often observed in (intermetallic compound)-hydrogen systems such as AB_5-H systems.

The other type of study is based on a different type of thermodynamic function [6] or an empirical function [7]. This study resulted in a more complete means of expression for the plateau region, even though this cannot present the behaviour of the miscibility gap at phase boundaries.

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