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Current transient 의 분석을 통한 니켈-금속 수소 화합물계 이차 전지의 양극으로 사용되는 LaNi₅ 합금 전극의 성능 특성 평가에 관한 연구

**Performance Evaluation of LaNi₅ Alloy Electrodes
Used as Anodes Nickel-Metal Hydride Secondary Batteries
by Analysis of Current Transients**

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The hydrogen transport through LaNi₅, LaNi_{4.7}Al_{0.3} porous electrodes in the coexistence of two hydrogen-poor α -phase and hydrogen-rich β -phase has been investigated during the hydrogen discharging from the electrode by analysing current decay transients. The current decay transient technique employed in this work proved to be a more informative approach to evaluation of the charge-discharge performance of the metal hydride electrode in practical use of the nickel-metal hydride(MH) secondary battery. The current transients were obtained from the electrodes in 6M KOH solution. After hydrogen was galvanostatically charged at various current densities and charging times, the electrode potential was jumped to $-0.6 V_{\text{Hg}/\text{HgO}}$. From this moment, the resulting current was recorded with time. From the occurrence of current plateau of initial stage in the three-staged current decay transients, it is suggested that the hydrogen transport through the spherical symmetric porous electrode proceeds by the up-hill diffusion coupled with interface-controlled phase boundary movement. Performance evaluation of MH porous electrodes was discussed in terms of charging efficiency, transition time of β -phase to α -phase decomposition and hydrogen contents in the electrode.

References

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