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LiAl_yCo_{1-y}O₂의 구조와 전기화학적 특성에 관한 연구 Structural and Electrochemical Properties of LiAl_yCo_{1-y}O₂ Cathode for Li Rechargeable Batteries

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LiCoO₂ is most widely used as the cathode material of commercial secondary lithium batteries due to its advantages including easy preparation and high theoretical specific capacity. Therefore, modifications which were made based on LiCoO₂ seem to be meaningful.[1] One of them consists of the introduction of other ions into the structure which may stabilize the layered solid with or without participating in the redox processes.[2]

The focus of this study is to adopt aluminium-doped LiCoO₂ as a cathode material for lithium secondary battery. LiCoO₂ and aluminium-doped LiCoO₂ powders were prepared by a sol-gel method using acrylic acid. X-ray diffraction results reveal that the resulting powders show well-developed single phase layered structure.

Electrochemical characterizations of layered oxides LiAl_yCo_{1-y}O₂(0 ≤ y ≤ 0.25) as cathode materials for lithium secondary batteries have been investigated using galvanostatic charge/discharge, electrochemical voltage spectroscopy and cyclic voltammetry. Structural characterization of the layered oxides also have been investigated using X-ray diffraction, neutron diffraction, and Rietveld refinement. Details will be presented at the conference.

- [1] G. Ceder, Y.-M. Chiang, D.R. Sadoway, M.K. Aydinol, Y.-I. Jang, and B. Huang, *Nature*, 392, 694(1998).
- [2] R. Alcantara, P. Lavela, P.L. Relano, J.L. Tirado, E. Zhecheva, and R. Stoyanova, *Inorg. Chem.*, 37, 264(1998).