

## B-11

### Rf-magnetron sputtering 방법으로 제조된 리튬 코발트 산화물 박막 전극내에서의 리튬이동에 관한 연구

#### Lithium Transport through Rf-magnetron Sputtered Lithium Cobalt Dioxide Thin Film Electrode

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Lithium transport through lithium cobalt dioxide thin film electrode prepared by Rf-magnetron sputtering was investigated in 1M solution of  $\text{LiClO}_4$  in propylene carbonate using galvanostatic charge-discharge experiment and potentiostatic current transient technique. Charge-discharge curves for crystalline lithium cobalt dioxide showed clearly potential plateaux at near  $3.9 V_{\text{Li/Li}^+}$ , which indicate the coexistence of Li-diluted  $\alpha$  phase and Li-concentrated  $\beta$  phase. The current build-up and decay transients exhibited the non-Fickian behaviour of lithium transport when the applied potential steps encountered the potential plateaux. It is suggested that the occurrence of this abnormal behaviour is accompanied by an  $\alpha/\beta$  phase transformation involving (diffusion-controlled) phase boundary movement. The lithium transport through the electrode comprising single phase and two phases has been theoretically considered by a numerical analysis of the simple finite length diffusion and phase boundary movement, respectively.

#### References

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