

## High-throughput-screening of novel Cathode materials by Combinatorial Method

선은정, 우성일\*

한국과학기술원 초미세화학공정센터(CUPS)

(siwoo@kaist.ac.kr\*)

LiCoO<sub>2</sub> has a reasonable capacity and high safety performance. However, due to its toxicity and high cost, the research of other materials, like LiNiO<sub>2</sub>, and LiMn<sub>2</sub>O<sub>4</sub>, are risen for alternating the LiCoO<sub>2</sub>. But difficulty of synthesis in LiNiO<sub>2</sub> and capacity fading in LiMn<sub>2</sub>O<sub>4</sub> induced new type compound LiCoO<sub>2</sub>-LiNiO<sub>2</sub>-LiMn<sub>2</sub>O<sub>4</sub> combi-arrays.

LiCoO<sub>2</sub>-LiNiO<sub>2</sub>-LiMn<sub>2</sub>O<sub>4</sub> combi arrays are consistently deposited by co-sputtering system. So, we can obtain various compositions in the one Pt/TiO<sub>2</sub>/SiO<sub>2</sub>/Si wafer. With obtaining various compositions in lithium secondary thin film battery, we can find the composition which is behaved good performance and less reactive with electrolyte compare to LiCoO<sub>2</sub>. Thin films prepared by co-sputtering system and were investigated at various post annealing temperatures such as 600°C, 700°C, and 800°C. The thin films were analyzed by micro-beam XRD. And patterned Pt which was used current collector of cathode material was successfully fabricated by MEMS technique. The current collectors were consisted of 7×7 dots. So, we can realize high-throughput-screening of novel cathode materials.