

LLZ elemental distribution and LCO/LLZ interface evaluation

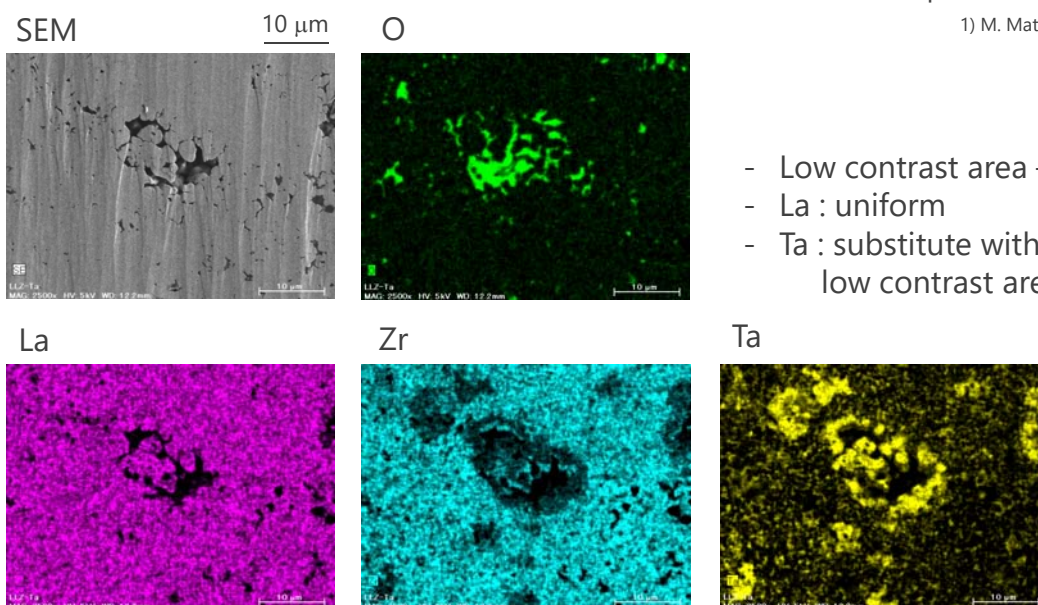
$\text{Li}_7\text{La}_3\text{Zr}_2\text{O}_{12}$: LLZ is a promising material for all solid battery, because of its relatively high ionic conductivity and stability with Li metals. Here two analytical examples are shown:
Elemental distribution of Ta-doped LLZ, and TEM/EELS analysis for the interface evaluation between LCO / LLZ.

Elemental distribution of Ta-doped LLZ

● Ta doped LLZ pellet

- Ta, Al doping : stabilize cubic crystals¹⁾
- Elemental distribution for doped LLZ : SEM/EDX

1) M. Matsui et al., Dalton Trans. 43 1019 (2014).



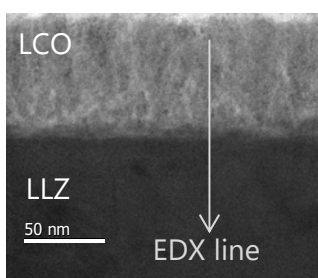
- Low contrast area – estimated LiO_x
- La : uniform
- Ta : substitute with Zr, locate around low contrast area

LCO/LLZ interface evaluation

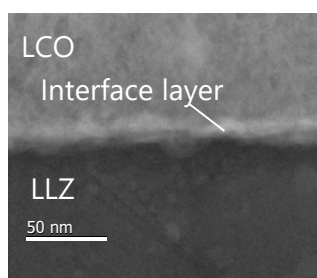
- LiCoO_2 (LCO, 50 nm) / LLZ sheet ※LCO : sputter deposition
- Annealing : O_2 , 500 °C, 2 h

Cross-section TEM

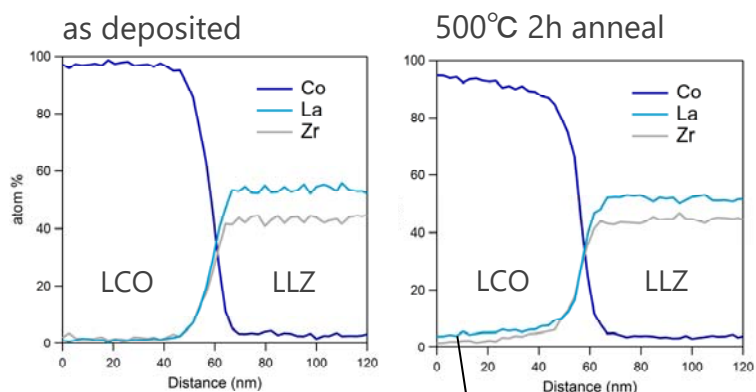
as deposited



500°C 2h anneal



EDX line profile



- - Interface layer formation
- La distribution into LCO are caused by annealing

La : distribute into LCO