Atomic layer deposition of high-k oxide films from La(NO3)3·6H2O solution oxidant

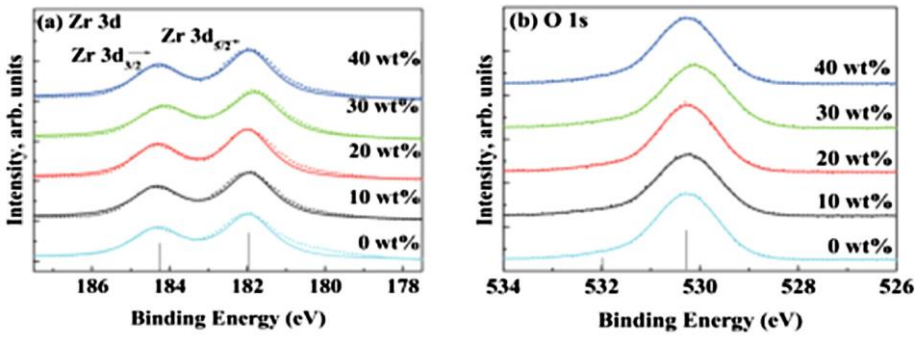

Fig. 1. XPS spectra of the nanocrystalline ZrO2 films deposited by ALD at varying concentrations of La(NO3)3·6H2O solution (0% means that H2O acted as the sole oxidant): (a) Zr 3d and (b) O 1 s

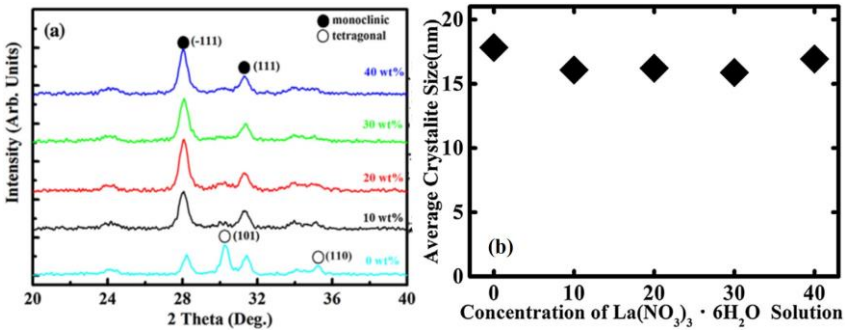

Fig. 2. (a) GIXRD patterns of the ZrO2films deposited at varying concentrations of La(NO3)3·6H2O solution. (b) Variations in the average crystallite size of the ZrO2 films

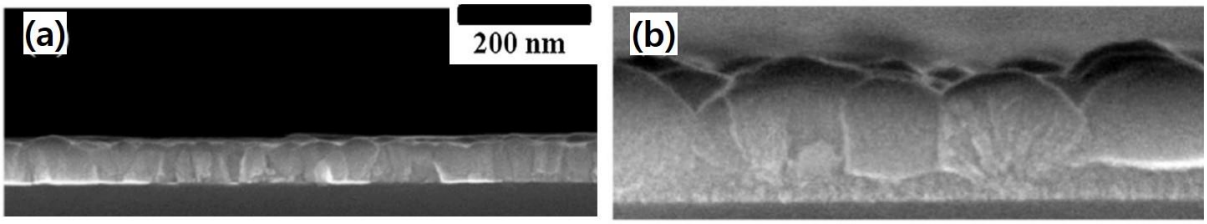

Fig. 3. Vertical SEM images of ALD-ZrO2 films prepared by (a) H2O and La(NO3)3·6H2O solution.

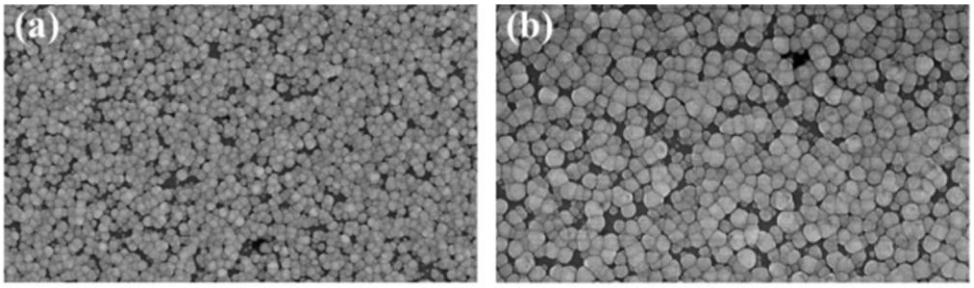

Fig. 4. Top-view SEM images of ALD-ZrO2 films prepared by (a) H2O and La(NO3)3·6H2O solution.

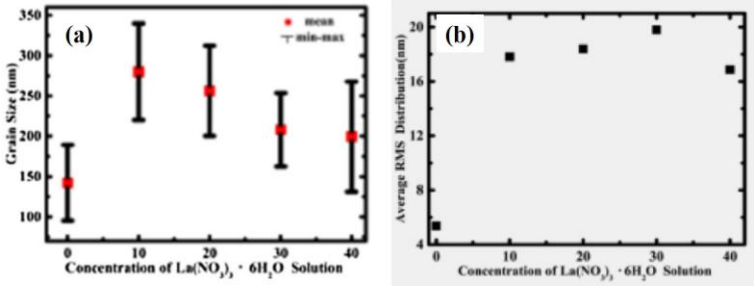

Fig. 5. Variations of (a) grain size and (b) roughness as a function of the concentration of La(NO3)3·6H2O.