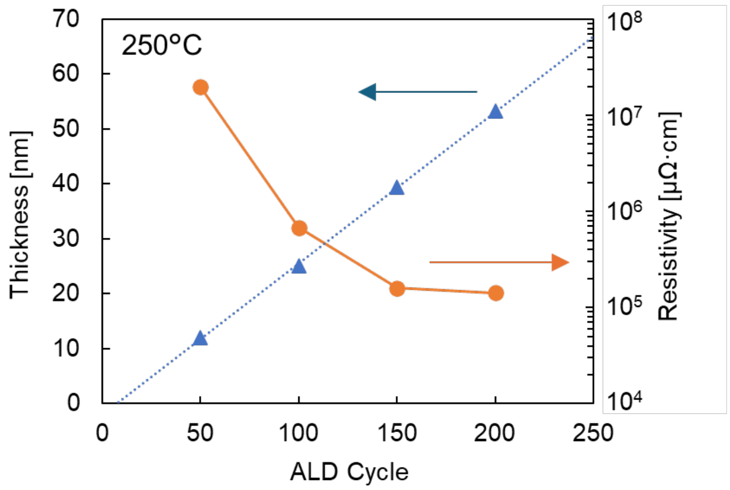


Fig.1. Thickness and resistivity of ALD-ZrN films as a function of ALD cycles.

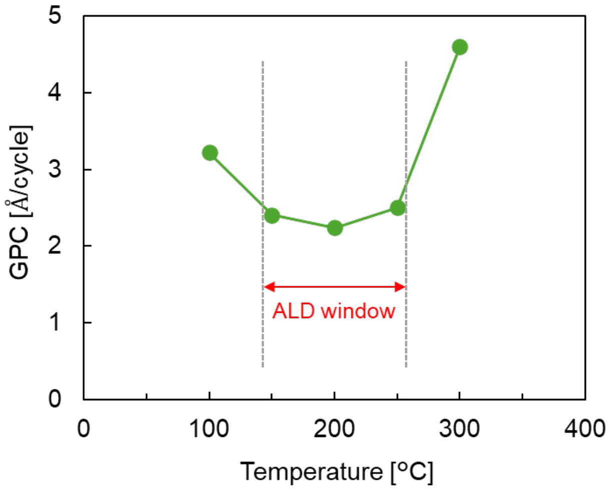
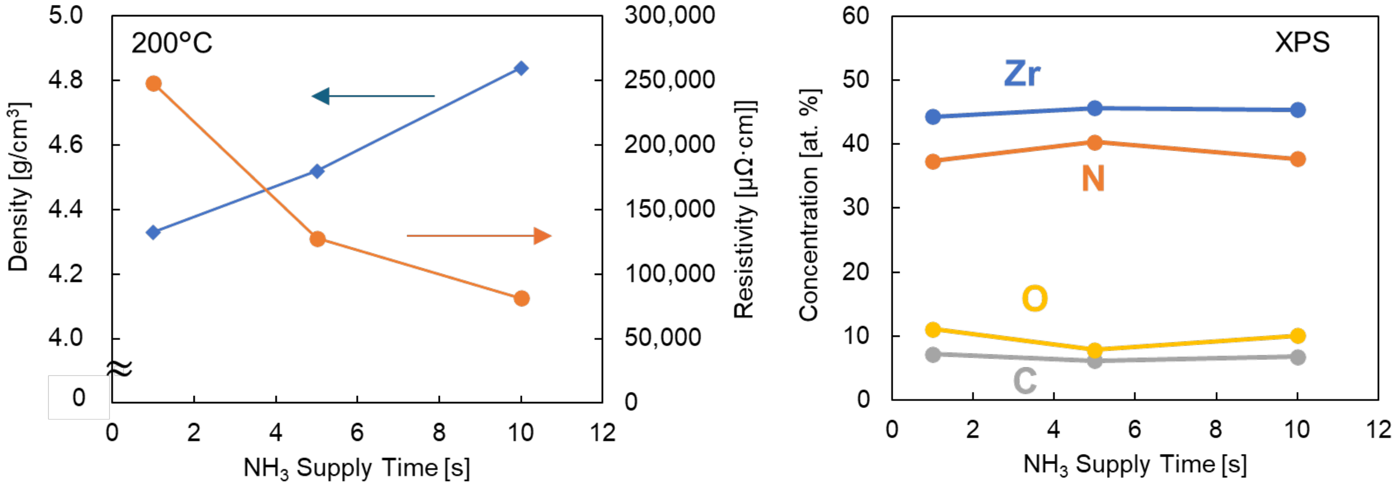


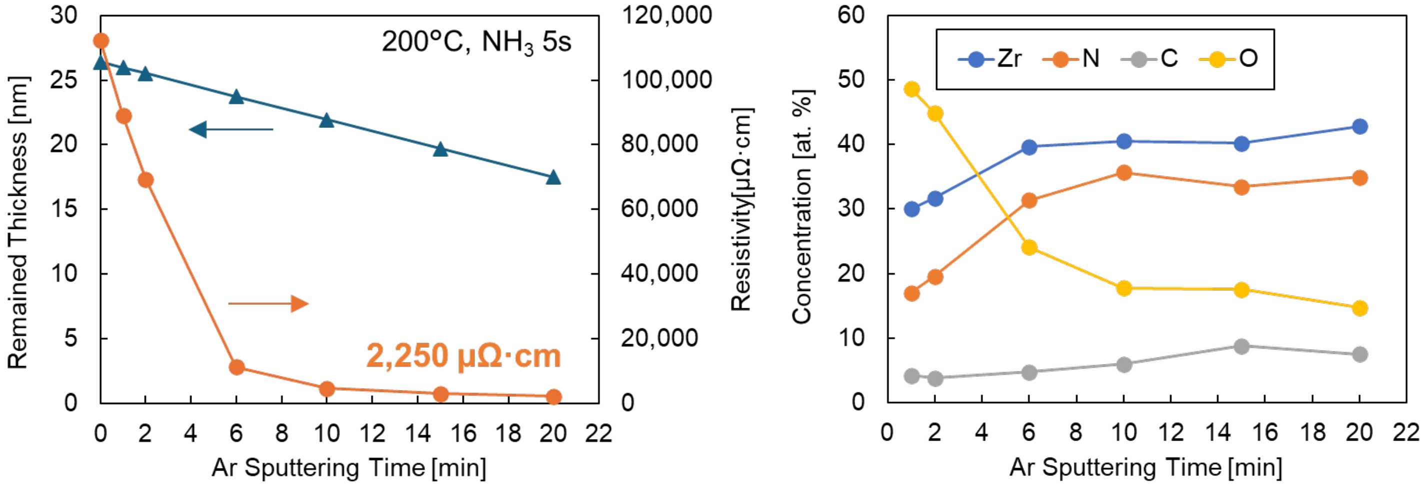
Fig.2. GPC of ALD-ZrN films as a function of deposition temperature.



(a) Density and resistivity

(b) Film composition analyzed with XPS

Fig.3. ZrN film density and composition dependencies on NH_3 supply time.



(a) Remained thickness and resistivity

(b) Film composition analyzed with XPS

Fig.4. Effects of Ar-sputtering in XPS Analysis System.