

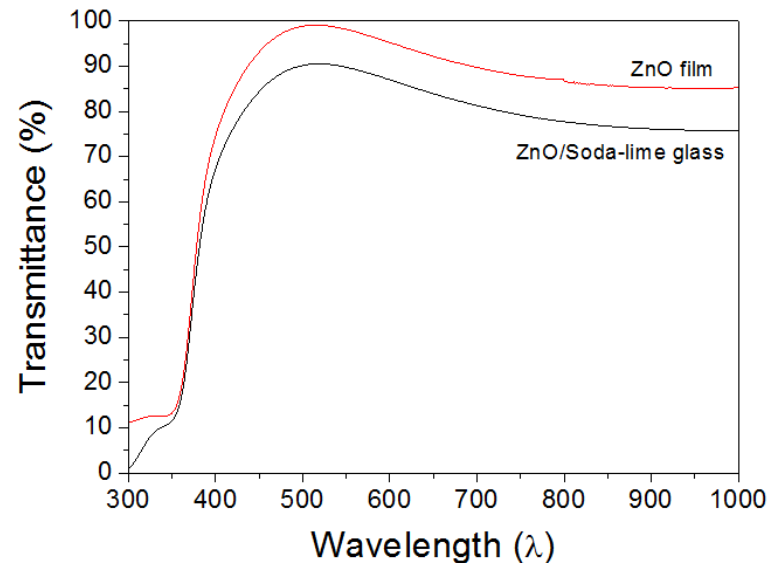
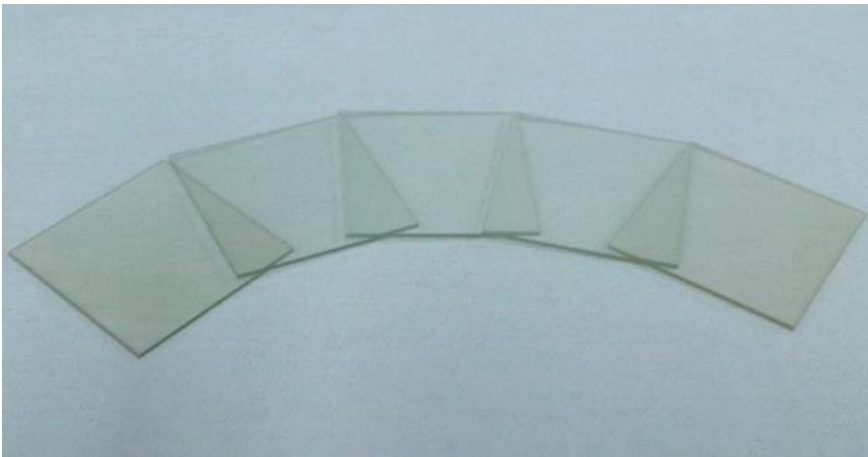
Characterization of Transparent ZnO film



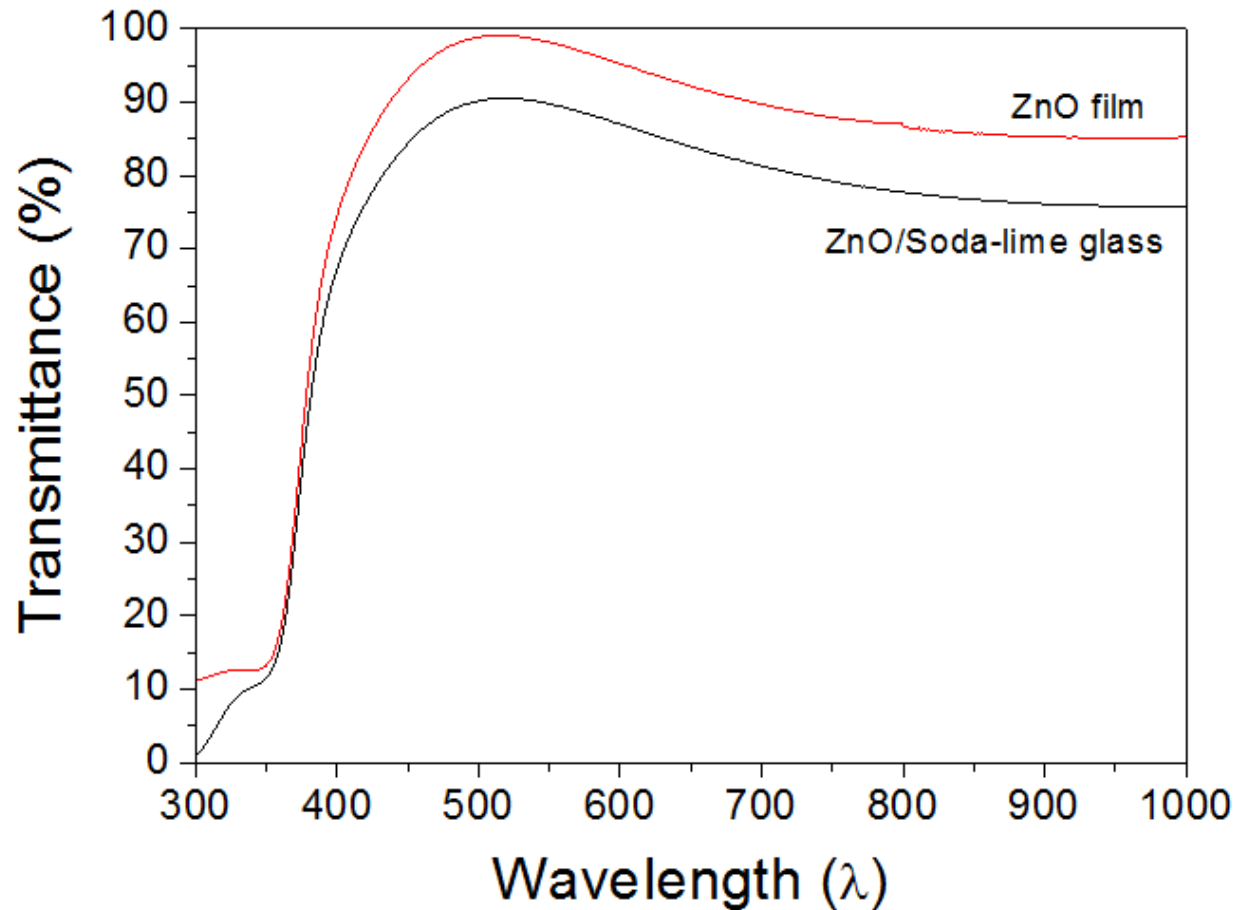
Transparency of ZnO Film on Soda-lime Glass

Film	Thickness (nm)	Transmittance (%)@550 nm		Sheet Resistance (Ω/\square)	Color
		Film	Film/glass		
ZnO	150	98.0	89.7	Insulator	Pale green

- ZnO film is deposited by O_2 reactive DC sputtering without intentional substrate heating.
- Substrate: soda-lime glass with 0.7 mm thickness
- Instrument for transmittance measurement: Spectro-Photometer (Model: Cary 5000)

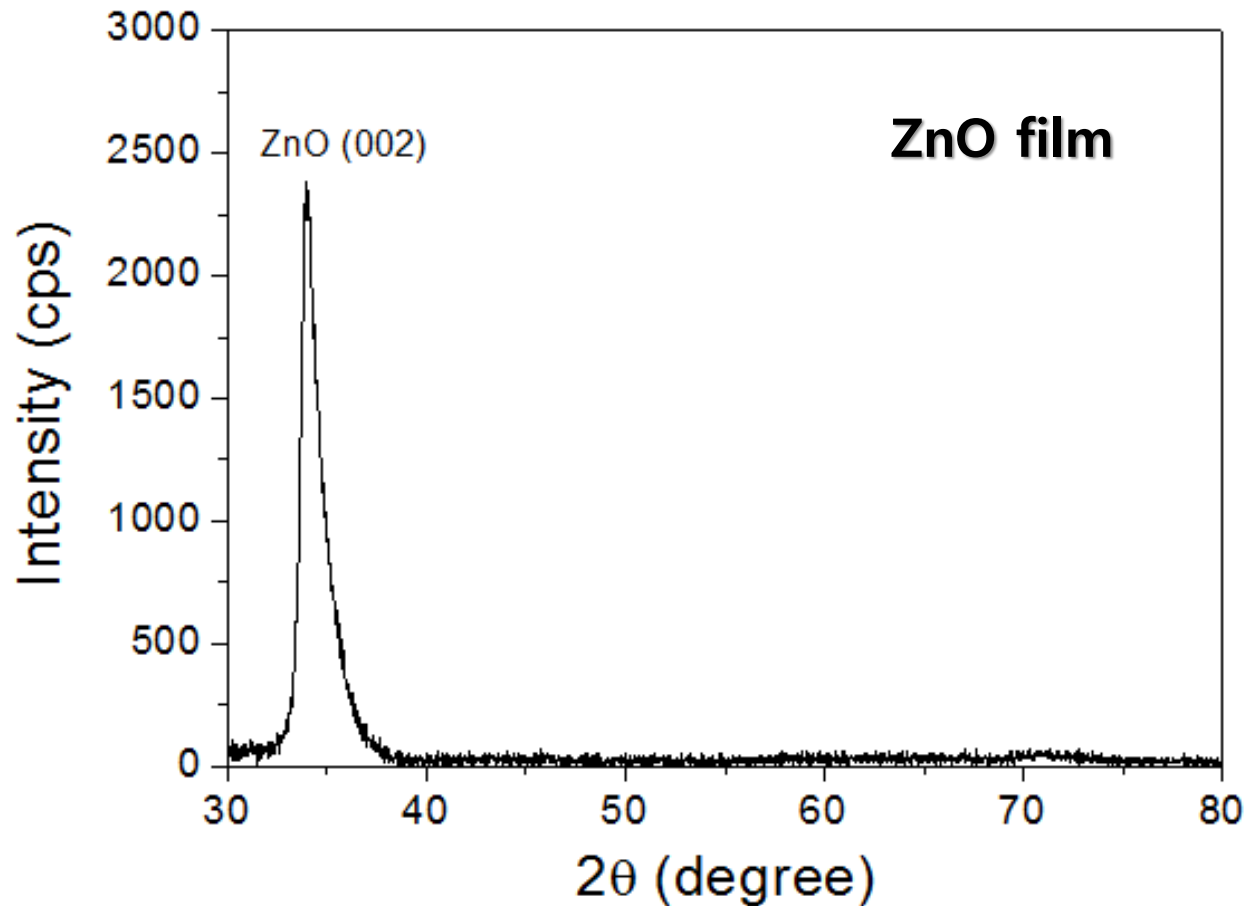


Optical Transmittance of ZnO Film on Soda-lime Glass



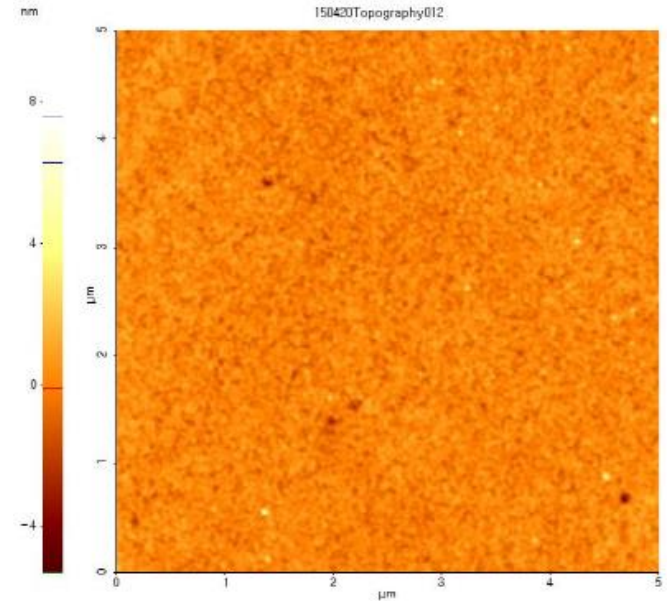
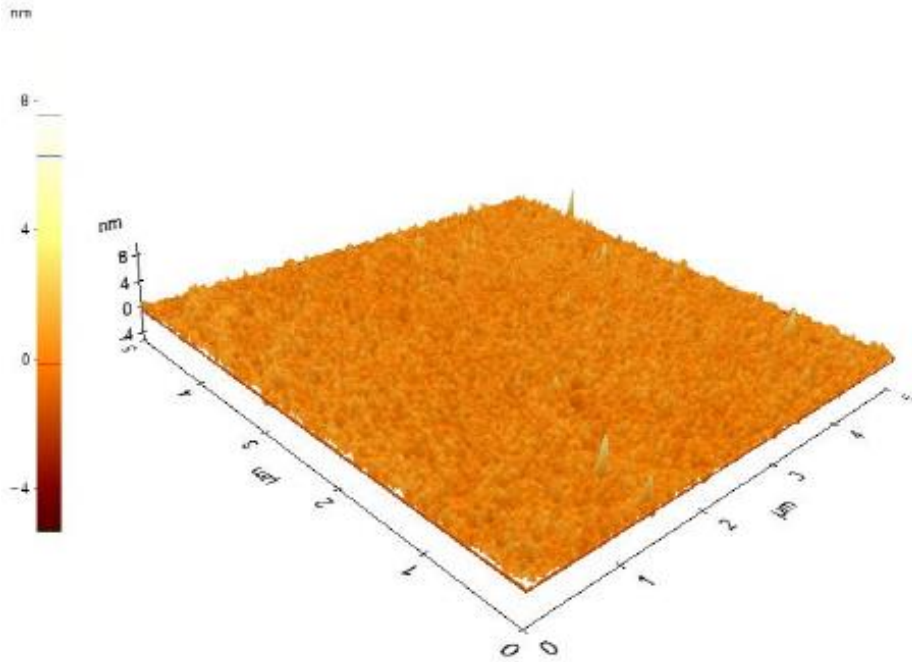
As-deposited ZnO film with 150 nm thickness shows highly optical transmittance of 89.7% on soda-lime glass.

Crystallinity of ZnO Film on Soda-lime Glass (XRD)



As-deposited ZnO film (150 nm thickness) shows polycrystalline nature with (002)-orientation.

Surface Roughness of ZnO Film on Soda-lime Glass (AFM)



$R_{MAX}(nm)$	$R_{RMS}(nm)$	$R_{AVG}(nm)$
6.260	0.561	0.435

As-deposited ZnO film (150 nm thickness) shows very smooth film surface morphology.

Microstructure of ZnO Film on Soda-lime Glass (SEM)

ZnO film(150 nm thickness) on Soda-lime glass

