

### Synthesis and characterization of ZnO comb-like structures for dye sensitized solar cell

모호드 나진, Sadia Ameen, 서형기, 송민우, 신형식\*  
전북대학교  
(hsshin@jbnu.ac.kr\*)

The work reports the synthesis of nanospikes decorated ZnO sheets on the electrodeposited ZnO seeded fluorine doped tin oxide (FTO) substrates through the hydrothermal method at 900°C and its application as photoanode for the efficient dye sensitized solar cells (DSSCs). The morphological characterizations confirmed that the unique nanospikes of average diameter ~80–100 nm were decorated on one or both the sides of ZnO sheets. The photoanode showed the relatively high dye absorption which was derived from the larger surface area of grown nanospikes decorated ZnO sheets. The solar-to-electricity conversion efficiency of ~2.51% with the high short circuit current (JSC) of ~6.07 mA/cm<sup>2</sup> was attained by DSSC fabricated with nanospikes decorated ZnO sheets photoanode. The fabricated DSSC with photoanode of nanospikes decorated ZnO sheets accomplished the moderate IPCE of ~31.8%. The enhanced performance and photocurrent might credit to the high charge collection and the fast electrons transfer at the interfaces of ZnO and the electrolyte layer due to substantially large surface for the high dye absorption leading to the light harvesting efficiency.