

### ZnO nanowires as a universal platform for studying complex cellular process in clinical diagnostics

Deepti Sharma, 임연호\*, 강보라  
전북대학교 반도체화학공학과  
(yeonhoim@chonbuk.ac.kr\*)

There is great interest in developing nanomaterials (NMs) to deliver therapeutic agents to cells. Nanostructures of zinc oxide (ZnO) mainly 1-dimensional nanowires have attracted much interest because of their unique piezoelectric, semiconducting and catalytic properties and a wide range of applications in energy conversion and medical sciences. Direct interconnection of the cells to the external world by interfacing nanowires may afford great opportunities to probe and manipulate biological processes occurring inside the cells, across the membranes, and between neighboring cells. So, it is necessary to characterize the physicochemical properties of ZnO nanowires and their behavior in biological medium. The NWs were dispersed by ultrasonication for 10 min in sterile phosphate buffer solution (PBS, pH 7.2). ZnO NWs in PBS (10  $\mu$ L) were added into these 96-well plates, containing cell in culture medium. Cells are incubated for 18-48 hours. The results showed that the ZnO nanowires are completely biocompatible and biosafe after internalized into the cells. The SEM and 3D confocal images showed that the cells after internalization of nanowires become rounded and less elongated therefore, showing some change in there morphology.