

Preparation of silver doped zinc oxide nanowires by using electrospray method

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Zinc oxide (ZnO) is an n-type semiconductor with a wide band gap, which shows the excellent electrical and optical properties. With its wide band-gap (3.37 eV), high excitonic binding energy, and high breakdown strength, ZnO can be utilized for electronic and photonic devices, as well as for high-frequency applications.

This study aims for the preparation of silver doped ZnO nanowires were onto the heated silicon substrate by using an electrospray method. The electrospray method is used to produce mono-dispersed droplets which sizes are sub-micron by applying high-voltage. By using electrospray, it is simple and versatile process to produce nanomaterial. The morphology of the obtained nanowires was examined using scanning electron microscopy (SEM). X-ray diffraction analysis was carried out to determine the crystalline structures of the nanowires. It was found that the uniformity of the nanowires was controlled by different operating parameters like flow rate of the precursor solution, applied voltage and the substrate temperature.