

Electrical properties of ZnO nanowires prepared by
templateless electrodeposition

Elena Matei, Camelia Florica, Andreea Costas, Ionut
Enculescu

National Institute of Materials Physics
Atomistilor St. 105 bis, Magurele, Ilfov, Romania

Electrodeposition of zinc oxide is an interesting technique for preparing nanostructures with tailored morphological properties such as, for example nanowires. Moreover, by choosing a certain set of deposition parameters one can adjust not only the shape of the resulting nanostructures but other properties as well, including here texture and optical properties but also electronic transport properties.

We used electrodeposition on special designed interdigitated electrodes to prepare nanowires and we measured transport properties for arrays of such nanostructures. The results were correlated with deposition conditions, i.e. deposition bath composition and overvoltage, and with optical and compositional properties.

Complex deposition conditions such as pulses and ramps were employed for obtaining nanostructures with even more control over morphological, structural and optical properties and further electrical properties.

Such nanostructures with precisely controlled properties present a huge potential in applications such as sensors, electronic or optoelectronic devices.