3.2 Nanoparticle zinc oxide (Nano-ZnO)

Zinc oxide can occur in one- (1D), two- (2D), and three-dimensional (3D) structures. One-dimensional structures make up the largest group, including nanorods, -needles, -helixes, -springs and -rings, -ribbons, -tubes, -belts, -wires -combs. Zinc oxide can be obtained in 2D structures, such as nanoplate/nanosheet and nanopellets. Examples of 3D structures of zinc oxide include flower, dandelion, snowflakes, coniferous urchin-like, etc. Nanoparticulate zinc oxide (Nano-ZnO) is typically 20nm – 45nm in scale. The primary particles tend to strongly bind to form aggregates, which further agglomerate in standard conditions (ambient air).

Zinc oxide (ZnO) NPs are described as a significant semiconductor material and of great interest in their characteristic properties such as wide-bandgap, high electron mobility, and great transparency in visible