Zinc oxide (ZnO) is a semiconductor of group II-VI, with importance in electronics and photonics devices due to its wide bandgap equal to 3.37 eV and its high exciton energy (60 meV). This work describes the synthesis and characterization of ZnO nanorods stabilized with poly (vinylpyrrolidone) (PVP). First, using a modification of the method reported by Ge and using PVP as a stabilizing agent, ZnO nanoparticles were synthesized with a size smaller than 15 nm. Subsequently, ZnO nanoparticles were put under reflux for 48, 96 and 144 hours in presence of PVP to form ZnO nanorods. Samples were characterized by UV-visible spectroscopy, infrared spectroscopy, X-ray diffraction and transmission electron microscopy. Using the results of UV-visible spectroscopy, the width of the bandgap by Tauc’s plot was calculated, yielding values of 3.17 eV for ZnO nanoparticles-PVP and 3.26 eV, 3.25 eV and 3.14 eV for nanorodillos obtained with 48, 96 and 144 hours of reflux, respectively. By XRD it was determined that all samples have hexagonal wurtzite structure and was seen that growth in nanorods is along the plane with Miller’s indices (002). The particle size determined with the Scherrer’s equation was 16.81 nm for ZnO nanostructures 0D in the presence of PVP. Infrared spectroscopy allowed to study the ZnO-polymer interaction and determine functional groups that interact and stabilize the nanostructures. Through transmission electron microscopy images, a particle size of 13-15 nm was determined, for hemispherical shaped ZnO nanoparticles, and a relation length/diameter of 2.3 and 2.7 for ZnO nanorods obtained at 48 and 96 hours of reflux, respectively.

**Keywords:** ZnO nanorods, stabilizing polymer, poly(vinylpyrrolidone) (PVP)

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