The Polymers and Surface Modified Nanoparticle ZnO were Studied by Powder X-ray Diffraction (PXRD) Measurements

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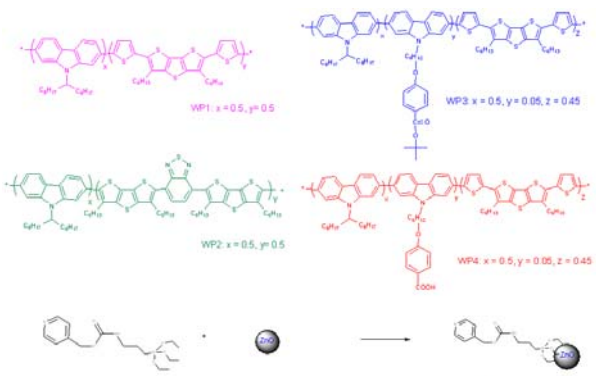
In order to determine the structure of the polymers (**WP1-WP4**) and surface modified nanoparticle ZnO (**Scheme 1**) were studied by powder X-Ray diffraction (PXRD) measurements.

Chemical structures of the polymers (**WP1-WP4**) and surface modified nanoparticle ZnO.(**Scheme 1**)

Based on the theoretical geometries estimated by CS ChemOffice, the molecular lengths of polymers **WP1-WP4** are 20, 21, 20.3, 20.3Å, respectively, which are calculated from the molecular projection lengths of the fully extended molecular lengths along the rigid cores. The values presented are only rough estimates.

ZnO as shown in **Fig. 1,** The result of powder X-ray diffraction patterns matches to Wurtzite of CPDS card （JCPDS 36-1451）.

As shown in **Fig. 2,** diffraction peaks 2θ= 3.0°,13.8°corresponding to the d_1-spacing values of 19.8 Å,4.3 Å for copolymers **WP1-WP4.**Peaks of polymers are broad in powder X-Ray diffraction spectra. It is demonstrated existence of characteristic of polymer.



Scheme 1 Chemical structures of the polymers (**WP1-WP4**) and surface modified nanoparticle ZnO

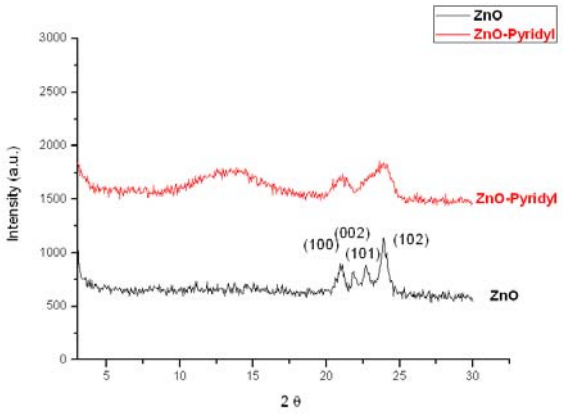


Figure1. Powder X-ray diffraction intensity of ZnO and surface modified nanoparticle ZnO

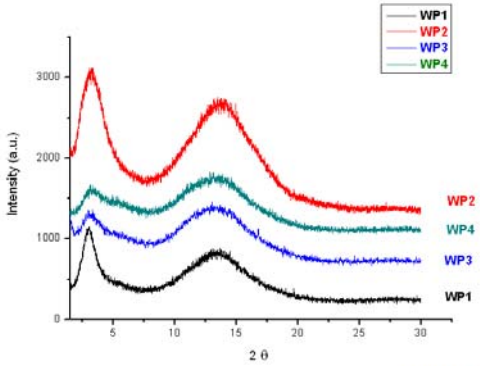


Figure2. Powder X-ray diffraction spectra of polymers **WP1-WP4**