

International Conference on

Industrial Chemistry

June 27-28, 2016 New Orleans, Louisiana, USA

Novel and facile eco-friendly method of synthesis poly (o-aminophenol) homopolymer and (o-aminophenol)-m- phenylenediamine copolymer based on mechano-chemical solid state polymerization

M H Abdel-Aziz^{1,4}, M Sh Zoromba^{1,2} and M Bassyouni^{1,3}¹King Abdulaziz University, Saudi Arabia²Port Said University, Egypt³Higher Technological Institute, Egypt⁴Alexandria University, Egypt

Two comparative synthesizing methods, mechano-chemical solid polymerization (MCSSP) and interfacial polymerization were applied to synthesizing poly (ortho-aminophenol) homopolymer P(oAP) and ortho-aminophenol and meta-phenylenediamine copolymer P(oAP-mPDA). MCSSP is a simple, rapid, free solvent, economically route. In addition; it can be classified as a green and environmental friendly method. The poly (ortho-aminophenol) P(oAP) and ortho-aminophenol –meta-phenylenediamine copolymer P(oAP-mPDA) were synthesized using developed Mortar Grinder RM200 without using solvents in the preparation process. Moreover, the previous polymers either homopolymer or copolymers were synthesized based on interfacial polymerization method. The comparison between the two techniques were carried out by justifying the following analyses, Fourier transform infrared spectra (FTIR), Ultra violet visible spectra (UV-Vis), X-ray diffraction XRD , thermo gravimetric analysis (TGA). Scanning electron microscope (SEM) and (EDS) the band gap energy for the investigated polymers located in the semiconductor materials range which it was found to be 1.74 and 1.95 eV. TGA shows that P(oAP) and P(oAP-mPDA) which synthesized by IP method is thermally more stable than which synthesized by MCSSP method. The crystallinity degree for the investigated polymers which synthesized by IP method is higher than which synthesized by MCSSP method. Polymers which under investigated were applied as inhibitors to the corrosion of metals in the acidic medium.

Biography

M H Abdel-Aziz has completed his PhD from Alexandria University, Egypt. He has published more than 32 papers in reputed journals.

helmy2002@gmail.com

Notes: