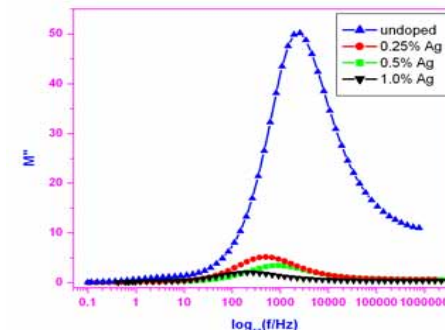
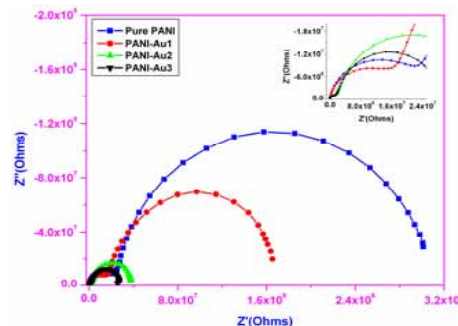
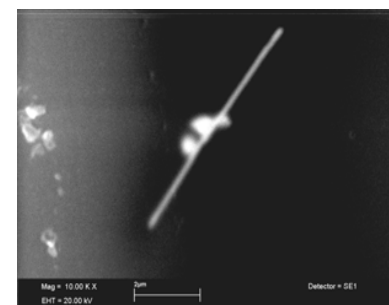
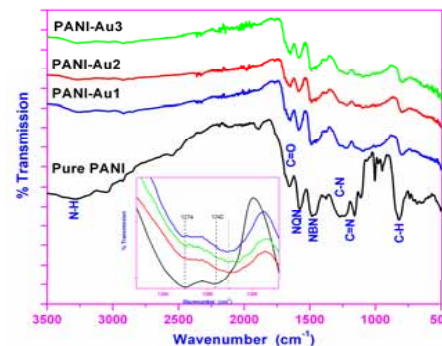
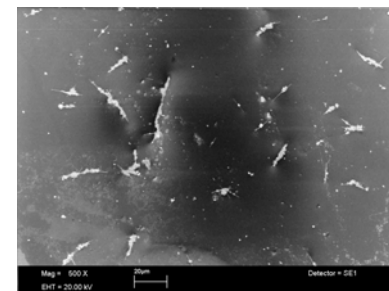
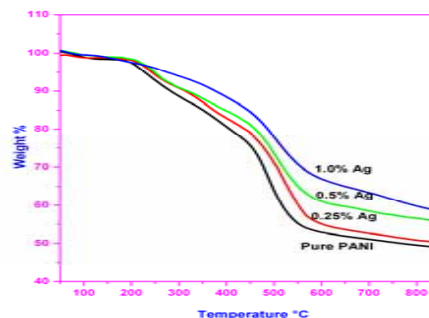


Synthesis and Characterization of Polyaniline Nanocomposites

by

Asma Binat Afzal

- Polyaniline (PANI) is distinctive among the family of conjugated polymers due to its unique properties. In this study PANI/Ag, PANI/Au, PANDS (DBSA doped PANI containing silver nanoparticles)/PVC nanocomposites, and PAND (DBSA doped PANI)/PVC blends have been synthesized. These materials were characterized by FTIR, XRD, UV-vis, SEM and TEM for structure analysis; whereas thermal studies were carried out by using TGA and HFC (Heat flow calorimetry). For the determination of electrical properties, impedance spectroscopy has been employed.



- Silver and gold nanoparticles were synthesized separately and then incorporated in PANIEB solution to prepare PANI/Ag and PANI/Au nanocomposite films. SEM showed a uniform distribution of Ag nanoparticles for low concentration and nanorods are formed at higher concentration. TGA and HFC revealed that the thermal stability of the nanocomposites has improved as compared to the pure PANI. The conductivity relaxation analysis suggested microphase separation of the films into phases of reduced and oxidized repeat units. Incorporation of metal nanoparticles in PANI has reduced the charge trapping centers and increased the conducting channels causing a considerable decrease in the real part of impedance.