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TiO_2/Polyaniline nanocomposite films prepared by modified plasma polymerization process JOYANTI CHUTIA, ARUP RATAN PAL, Institute of Advanced Study in Science and Technology, BIMAL KUMAR SARMA, Indian Institute of Technology — The applicability of simultaneous process of reactive magnetron sputtering and plasma polymerization for synthesis of nanocomposite thin films of metal oxide/conducting polymer has been investigated. Films of 400–500 nm thickness are deposited in a plasma system and process parameters have been optimized for the formation of TiO_2/polyaniline nanocomposite films. Chemical compositions of the films are carried out using Fourier Transform Infrared Spectroscopy. The X-Ray Diffraction patterns of the composite films reveal the presence of nanocrystalline rutile TiO_2 with crystallite size of 3-5 nm. The surface morphology studied using tapping mode Atomic Force Microscopy shows uniform surface with rms roughness of 2.59 nm. The ac conductivity measured with LCR meter in the frequency range 100 Hz–1 MHz in metal-composite-metal sandwiched structure shows significant improvement as compared to plasma polymerized aniline.

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