

Nanocrystalline silver oxide (Ag₂O) thin films were deposited by pulsed-laser deposition technique on glass substrates using Q-switched 1064nm Nd:YAG laser at pulse repetition rate of 1 Hz. The films were deposited at different substrate temperatures varying from 100 to 200 °C using 25 laser pulses for each sample at constant energy (900 mJ). The x-ray diffraction (XRD) patterns confirmed the formation of nanocrystalline cubic Ag₂O phase. The best crystallinity was obtained by the samples prepared at substrate temperature of 150 °C. As the substrate temperature was increased, both the grain size and surface roughness increase too. The measured grain sizes were 77.38, 90 and 100 nm with r.m.s. roughness values of 5.86, 8.43 and 9.87 nm for thin films deposited at 100, 125 and 150°C, respectively. The deposited films showed high transparency (nearly 90%) in the wavelength range of 200-800 nm with energy band gap in the range of 3.75-3.93 eV