

Pure and Cu⁺² doped TiO₂ thin films have been successfully deposited onto glass substrate by sol-gel dip-coating. The films were annealed at 450 °C for 1 h and characterized by X-ray diffraction (XRD), scanning electron microscopy (SEM-EDX), atomic force microscopy (AFM), UV-vis spectrophotometer and photocatalytic degradation of methylene blue. XRD confirmed the presence of two phases at higher Cu concentration; TiO₂ anatase and CuO. AFM analysis showed that the surface roughness increases within increasing Cu content as well as the presence of large aggregates at higher Cu content. SEM observations confirmed the granular structure of the films, and EDX analysis revealed a low solubility limit (effective doping) of Cu into TiO₂ lattice. It was found that the optical band gap energy decreases with increasing Cu content. At constant irradiation time, the photo-degradation of methylene blue rate decreased with increasing concentration of Cu⁺².