

In this study, pure and Fe doped TiO<sub>2</sub> thin films have been prepared via sol-gel method using the tetraethyl-orthotitanate as source of Ti and Fe(III) nitrate as a source of Fe<sup>3+</sup> doping. XRD patterns exhibit typical peaks of TiO<sub>2</sub> anatase phase. SEM observations confirm the nanometer grain size (below 10 nm) without a defined shape. Optical measurements indicate a transparency in the range 80–100%, it increases with Fe doping level while the energy band gap slightly decreases; 3.36 – 3.28 eV. Wettability test shows a super-hydrophilicity of Fe<sup>3+</sup> doped TiO<sub>2</sub> thin films and the low contact angle is founded for 0.6%Fe. However, no enhancement in photocatalytic activity of Fe doped TiO<sub>2</sub> thin films have been achieved. This may be attributed to sodium diffusion from the substrate. The as-prepared nanostructured Fe-doped TiO<sub>2</sub> thin films can be used as potential candidate for self-cleaning due to the super-hydrophilicity character in the visible light