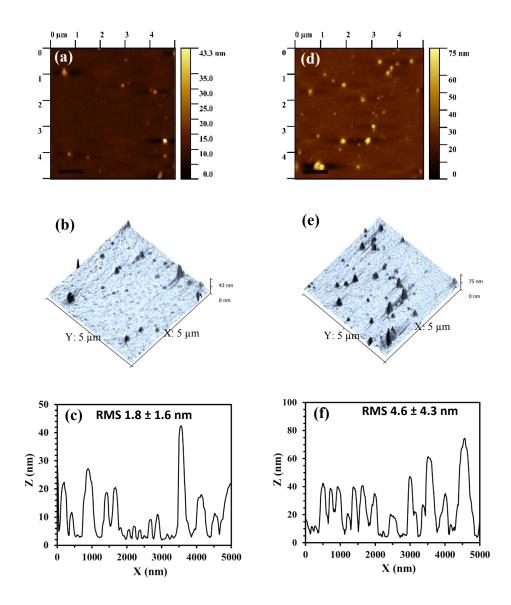
## **Supporting Documents**



**Figure S1:** The AFM morphology images ( $5\mu m \times 5\mu m$ ) of ZnO films with (a) 3.5 mg/ml and (d) 4.5 mg/ml weight concentrations of plasmonic Na<sub>x</sub>WO<sub>3</sub> nanoparticles. The 3D images of (b) 3.5 mg/ml and (e) 4.5 mg/ml weight concentrations of Na<sub>x</sub>WO<sub>3</sub> nanoparticles embedded ZnO films showing the surface morphology as well as height of each plasmonic nanoparticle. The calculated height of each plasmonic nanoparticle along with X-axis are presented for (c) 3.5 mg/ml and (d) 4.5 mg/ml weight concentrations of plasmonic Na<sub>x</sub>WO<sub>3</sub> nanoparticles based ZnO films where the average height of all nanoparticles for corresponding films are  $10 \pm 8.5$  nm and  $24 \pm 17$  nm.