Enhanced photo catalysts and Anticancer Sensitivity on green hydrothermal synthesized Ag@TiO_2 nanoparticles

TiO_2

water treatment, catalysis, lithium-ion batteries, and sensors, anticancer and antibacterial activity

Ag

Silver is easily available noble metal and having high work function, antibacterial property, more importantly, its SPR effect at the desired wavelength

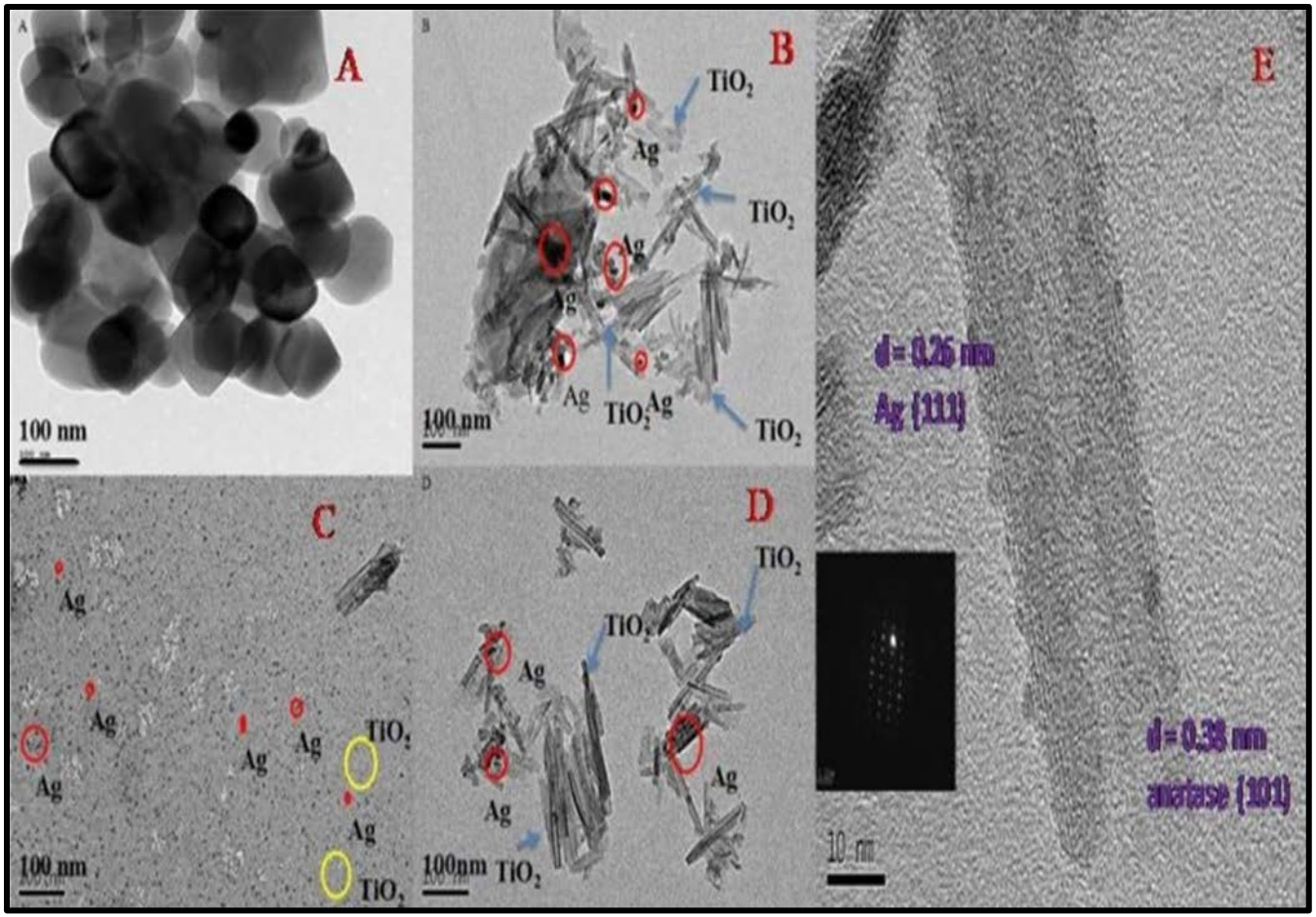
Picric acid is nitroaromatic compound and its salts are used as explosive properties

Aloe Vera gel used as capping and reducing agent of nanoparticles and promotes nontoxicity properties to green synthesized nanoparticles compared with chemical synthesis

- Ag@TiO_2 formation, Ag(4d) promotes effective photogenerated electron holes separation that leads to narrow bandgap that promotes visible light absorbance property
- Visible light absorbance of TiO_2 NPs not only promotes improve quantum yield but also generate excess free radicals that lead to enhanced photocatalytic activity.

- In cell line studies, TiO_2 NPs induce the cell lines, ROS is produced. That ROS damage the DNA, apoptosis, and necrosis. A549 cell line is an adenoma lung cancer cell lines, which is used to investigate the impact of nanoparticles.

- **Preparation of Aloe Vera Gel**
- **Hydrothermal synthesis of TiO_2 NPs**
- **Hydrothermal synthesis of Ag@TiO_2 NPs**
- **Photocatalytic Experiments**
- **Cell culture and MTT cell viability assay**
- **Acridine orange/Ethidium bromide (AO/EB) staining**
- **Dichloro-dihydro-fluorescein diacetate (DCFH-DA) assay**



TEM images: (A) pure TiO_2; (B) Ag@TiO_2-0.005M; (C) Ag@TiO_2-0.010M; (D) Ag@TiO_2-0.015M. (E)HRTEM image of Ag@TiO_2nanostructures (Inset: selected area electron diffraction (SAED) from a single Ag nanocrystal).

Thank You