

### Fabrication of TiO<sub>2</sub> macroporous films loaded with Pt used for enhanced photocatalyst

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Titanium dioxide (TiO<sub>2</sub>) is used as a photocatalyst in such processes as industrial wastewater treatment since it is a large-band-gap semiconductor with a catalytically active surface. For enhancing photocatalytic activity, macroporous structure, which has a larger active surface, is effective. Furthermore, modification of TiO<sub>2</sub> structures such as introducing small amounts of noble metal can increase the activity of TiO<sub>2</sub> even under visible light.

In this study, we have synthesized the TiO<sub>2</sub> macroporous films loaded with platinum (Pt) nanoparticles. Pt/TiO<sub>2</sub> nanocomposite films were fabricated mainly by two steps: (i) Prepared in the TiO<sub>2</sub> macroporous films through dip coating process via modified sol-gel method using PS colloidal template; (ii) On TiO<sub>2</sub> macroporous films, Pt nanoparticles were loaded using H<sub>2</sub>PtCl<sub>6</sub> solution. This Pt/TiO<sub>2</sub> nanocomposite films were used for enhanced photocatalyst.