

## **Titanium dioxide supported platinum catalyst synthesis: Ultrasound approach**

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### **Abstract**

The age old concept is catalyst increases the rate of reaction but the surface area to volume ratio of catalyst, has significant impact on the catalytic activity. The noble metals such as platinum, gold are quite expensive in spite of this they have proven their existence in catalysis. This fact has motivated the concept of supported metal catalyst synthesis. In this, catalyst metal needs to be highly dispersed onto the support. The present work focused on the synthesis of titanium dioxide (TiO<sub>2</sub>) supported platinum (Pt) catalyst assisted by ultrasound technique. Microjets formed during ultrasound cavitation avoid the interaction between crystals and thus crystals of smaller size are obtained.

The synthesized catalyst is characterized using various characterization techniques such as X-ray diffraction (XRD), transmission electron microscopy (TEM), scanning electron microscopy (SEM), energy dispersive spectra (EDS) and particle size analysis (PSA). The results obtained corroborated the size and composition of the synthesized catalysts. The size of the catalysts is in the nanometer range and good dispersion of platinum catalyst over the titanium dioxide support is also explained in detail.