

## **Synthesis of titanium dioxide microstructures via sucrose ester microemulsion-mediated hydrothermal method.**

### **Abstract**

Titanium dioxide particles were successfully prepared using microemulsion-mediated hydrothermal processing route, with sucrose ester as a stabilising agent. X-ray diffraction patterns revealed that the particles possessed anatase crystal phase. Scanning electron micrographs showed micron-sized spherical particles with rough and smooth surfaces, which eventually interconnected with one another. The formation mechanism of the titanium dioxide microstructures was postulated. The as-prepared particles were subjected to photocatalytic degradation of methylene blue, which exhibited higher photocatalytic activity compared to their commercial counterpart.

**Keyword:** Titanium dioxide; Microemulsion; Hydrothermal; Sucrose ester.