Advantages and applications of sustainable and green synthesis of titania: a review

ABSTRACT

The methods that applicable to synthesis titanium dioxide (TiO2) nanoparticles have been thoroughly reviewed. In this review, the focus will be on both the chemical and green synthesis of TiO2. Presently, green synthesis innovated by various researchers to prepare TiO2 nanoparticles due to their advantages offers where green synthesis does not require high quantity of chemical reagents and its offers sustainability. Green synthesis consists of and not limited to plant based, it can also originate from an aquatic animal, as well as enzymes where all of these categorized as natural resources that can be exploited for the green synthesis of nanomaterials coupled with the low cost and non-toxic final product. Although the chemical synthesis approach capable in producing large batch of nanoparticles, the disadvantages is it can harm the ecosystem due to their by product's formation. In addition, green synthesis will produce minimum chemical waste in comparison to chemical synthesis. Herein, details comparisons between these two approaches are properly reviewed.

Keyword: Titanium dioxide (TiO2); Green synthesis; Chemical