Faculty of Engineering
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Development of Surface-Functionalized Nanosheets Catalysts

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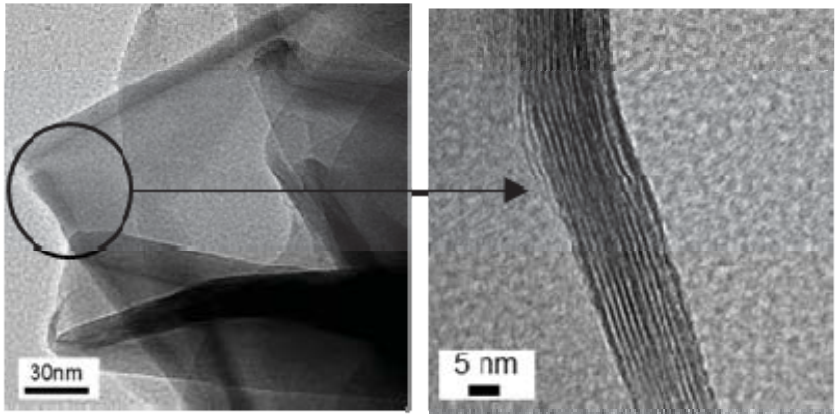

Fig.1 TEM images of layered nanosheets

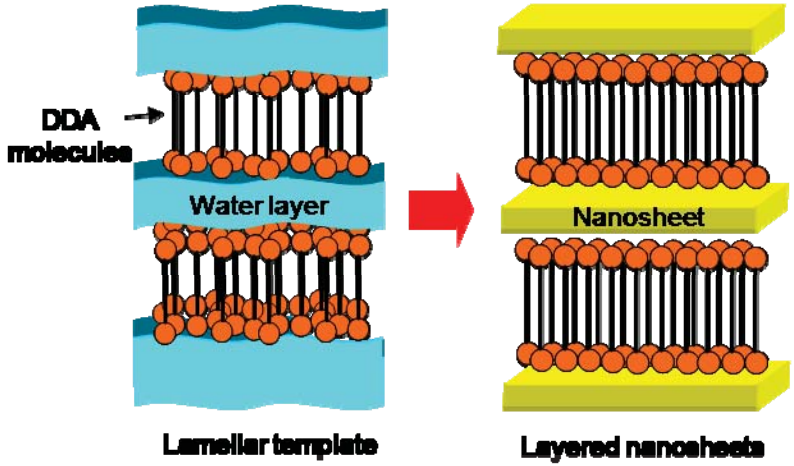

Fig.2 Schematic illustrations of the formation process of Nanosheets using lamellar self-assembly as a template

Content:

Two dimensional metal oxide nanosheets have attracted much attention as a new class of nanoscale materials because of their unique physical and chemical properties. Therefore, applications that use nanosheets as various kind of catalysts such as photocatalysts and solid acid catalysts have been reported.

However, a conventional method requires prolonged continuous processes such as calcination for the synthesis of layered compounds at high temperature and successive acid treatment.

In our method, layered nanosheets forms by using the lamellar self-assembly of surfactant as a template. This method is effective for the mass production of metal oxide nanosheets. This approach leads to titanate nanosheets with new properties such as visible light absorption and a high adsorption of cationic organic compounds, which results in the effective photodegradation of organic dye under visible-light irradiation. This approach has important implications for the use of metal oxide nanosheets in environmental and industrial applications.

Keywords : nanostructure, surfactant, layered compound, photocatalysts

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