

## Synthesis and characterization of two-dimensional alpha-quartz nanoplates from amorphous silica nanoparticles as precursor for application of microalgal harvest

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Crystalline silica is one of the mineral components containing silicon and oxygen, in the earth's crust. It has been used to make products engineering materials and used for applications such as potential electrode materials in the rechargeable battery and optoelectronic and sensing devices. One of the polymorphism of crystalline silica is  $\alpha$ -quartz. Their typical structure shows spherical nanoparticles exhibiting the crystallinity of  $\alpha$ -quartz. However, synthesizing novel crystalline silica possessing thin two-dimensional nanostructure has not yet been reported. We report synthetic methods of preparing crystalline silica and its properties such as morphology, surface and crystallinity. The experimental evidence suggest that they are highly crystalline exhibiting the crystal structure of  $\alpha$ -quartz such as powder X-ray diffraction (XRD), scanning electron microscopy (SEM), transmission electron microscopy (TEM), X-ray photoelectron spectroscopy (XPS), and atomic force microscopy (AFM). Our results on the complete characterization with the its different properties and application for microalgae harvesting process will be discussed in the presentation