

## Application of TiO<sub>2</sub>-deposited Diatom for Photocatalytic Degradation of Organic Compounds

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Diatoms are single cell algae that make silica shells (frustules) with nanoscale features imbedded within two-dimensional arrays of pores. Living diatom itself metabolically insert nano-structured titanium dioxide into its surface. *Navicula* sp. (#1271) and *Colonies schroederi* form Korean culture bank (KMMCC) were cultured in natural sea water supplemented with f/2 nutrients in the photo-bioreactor. A two-stage photo-bioreactor was used for increase the incorporation of titanium into the silica frustule. In stage I, diatom cells grown up in dissolved silicon until silicon starvation. In stage II, soluble titanium and silicon were continuously fed to the silicon starved cell suspension while the titanium was taken up. *Colonies schroederi* is more preferable in terms of the growth rate, the frustule structure stability and the incorporated amount of TiO<sub>2</sub> than *Navicula* sp. TiO<sub>2</sub>-deposited *Colonies schroederi* showed photocatalytic activity and could be employed for degradation of organic compound models such as Congo Red and Methylene Blue.