

**Biogenic TiO<sub>2</sub> Particle: comparison of cell growth and cell rigidity between two marine diatom species**

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Diatoms are unicellular photosynthetic eukaryotes, within Bacillariophyceae class in the Heterokont division, whose peculiarity is presence of silicious cell wall and two dimensional pore arrays. Living diatoms themselves metabolically insert nano-structured titanium dioxide into their surfaces. *Navicula* sp. (#1271) and *Colonies schroederi* from 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 controlled 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. Analysis and comparison of SEM images of both species after SDS treatment showed that frustule of *Colonies schroederi* is stronger than that of *Navicula* sp.. Hence, *Colonies schroederi* is more preferred candidate for biologically TiO<sub>2</sub>-insertion study.