

Test on Ultraviolet Absorption by Kyoto University, Japan



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Ultraviolet absorption of nanoYo Japan TiO₂ nanoparticles suspension

Absorption spectrum of nanoYo Japan TiO₂ nanoparticles suspension was measured in the range of 220 nm to 500 nm using a spectrophotometer (Shimadzu UV-1600). The equipment allows us to measure the transmission or absorption of ultraviolet and visible light of a specific wavelength, and the wavelength can be scanned. Because the absorbance of the original suspension was too strong in the ultraviolet-light region, the suspension was diluted 200-fold with 5% (w/w) isopropanol, which is the solvent for the nanoYo TiO₂ suspension. The reference was the isopropanol solution. Figure 1 shows the absorption spectra from 220 nm to 500 nm. Strong absorption was recognized at the wavelengths lower than 270 nm. This fact indicates that the nanoYo Japan TiO₂ nanoparticles suspension possesses a high ability to absorb ultraviolet light.

The nanoYo Japan TiO₂ suspension was poured on the inner and outer surfaces of quartz cell and air-dried gently. The cell was set to the spectrophotometer and the absorption spectrum was measured using the empty cell as a reference. As shown in Fig. 2, the absorbance at 240 nm was about 0.95. This value indicates that ca. 89% of ultraviolet light of the wavelength of 240 nm is protected by the cell surface. That is, the nanoYo Japan TiO₂ layer deposited on solid surface has a sufficient ability to absorb ultraviolet light.

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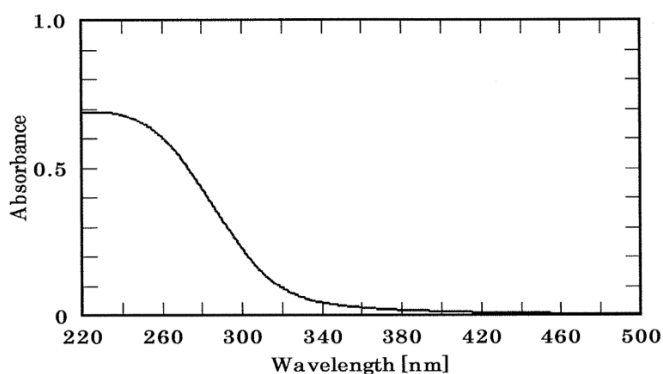


Fig. 1. Absorption spectrum of the nanoYo Japan TiO₂ suspension. The length of light pass was 1.0 cm.

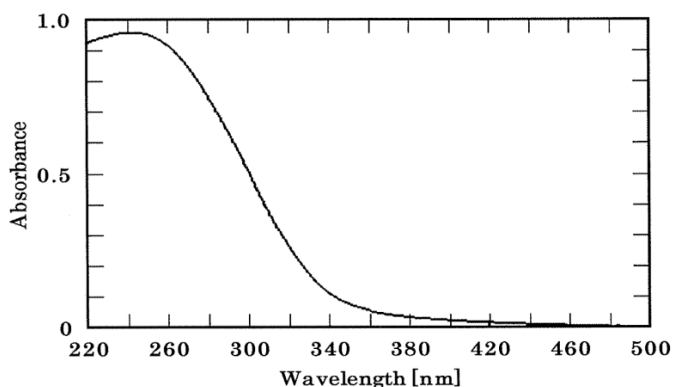


Fig. 2. Absorption spectrum of the nanoYo Japan TiO₂ nanoparticle layer deposited on the quartz cell surface.