

## 염료감응 태양전지용 빛산란 입자의 크기에 따른 산란효과

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### Size-dependent Scattering Efficiency in Dye-sensitized Solar Cell

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**Key words** : dye-sensitized solar cell, light scattering, size-dependent

**Abstract** : Effect of scattering particle size on light scattering efficiency in dye-sensitized solar cell has been investigated with a FTO/semitransparent nano-TiO<sub>2</sub> layer (main-layer)/scattering layer (overlayer) structure, where two different rutile TiO<sub>2</sub> particles of 0.3 μm (G1) and 0.5 μm (G2) were used for a scattering overlayer and 20-nm anatase particle for nano-TiO<sub>2</sub> main-layer. The conversion efficiency of 7.55% for the 7 μm-thick main-layer film is improved to 8.94% and 8.78% when G1 and G2 particulate overlayer is introduced, respectively, corresponding to 18.4% and 16.3% increment. While the conversion efficiency of the 14 μm-thick main-layer is slightly improved from 8.60% to 9.09% and 9.15% upon depositing G1 and G2 particulate overlayer, respectively. Significant improvement and strong size-dependence upon deposition of scattering overlayer on the relatively thinner TiO<sub>2</sub>main-layer film are associated with the quantity and wavelength of transmitted light and the difference in reflectivity of G1 and G2 scattering particles.

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