

### Synthesis of Nano-cubic structured titanium nitride for dye-sensitized solar cells and Photocatalytic activity

황철호, 박주영<sup>1</sup>, 이주현, 이인화\*  
조선대학교; <sup>1</sup>서남권청정에너지기술연구원  
(ihlee@chosun.ac.kr\*)

The most active and vibrant research in the TiO<sub>2</sub> photocatalyst field is how to widen the reaction zone of wavelengths in order to use visible light as the catalyst. It is possible to make a semiconductor absorb more visible light by doped TiO<sub>2</sub>, precious metal metallization, rare earth metal ions, and nonmetal doping.

Transition metal doping is a way to raise the efficiency of photocatalysts. Numerous applied ways have been studied to slow down the charge pair recombination velocity and to raise the electron transfer rate at the interface. The way of doping a semiconductor with noble metals such as Iron, Nickel, Vanadium, Chrome, Platinum, Ruthenium or making composite semiconductors is a good example of slowing down the charge pair recombination velocity and raise the efficiency of photocatalysts.

The cubic TiN films were fabricated using a low-temperature hydrothermal method. The morphology, crystalline phase, and composition of these TiN nanostructured films were characterized systematically by scanning electron microscopy, X-ray diffraction, X-ray photoelectron spectroscopy, and UV-vis spectroscopy.