

Fabrication of Well-aligned TiO₂ Nanodots Arrays via Template-assisted Sol-gel method for photoelectric devices

노유성^{1,2}, 김현진^{1,2}, 김영민^{1,2}, 이선화^{1,2}, 김원배^{1,2,†}

¹광주과학기술원 신소재공학부;

²광주과학기술원 차세대에너지연구소

(wbkim@gist.ac.kr[†])

In this study, well-controlled arrays of TiO₂ nanodots are successfully demonstrated by using anodic aluminum oxide (AAO) templates. The produced TiO₂ nanoarrays are perfectly replicated with the AAO templates, and the diameter of the nanostructures is precisely modified with a tight size correspondence of the AAO pores, which are adjusted within the range from 40 nm to 80 nm in diameter. The optical property of the TiO₂ nanodot arrays is investigated with changing their size and calcination temperature, by UV-visible spectra absorption and Photoluminescence (PL). It is worth stressing that these controlled TiO₂ nanoarrays could play an important role in developing the high-performance photoelectrical devices. [This work was supported by the National Research Foundation of Korea (NRF) grant funded by the Korea government (MSIP) (No. 2014R1A2A1A11052414) and the Core Technology Development Program for Next-generation Solar Cells of Research Institute for Solar and Sustainable Energies (RISE), GIST.]