

Nanoporous TiO₂ as Low-n Material for DBR Device

Duck-Hee Lee¹, Hyun-Dam Jeong¹, Si-Hyun Park²

¹Department of Chemistry, Chonnam National University, Gwangju 500-757, Korea

²Department of Photonic Engineering, Chosun University, Gwangju 501-759, Korea

TiO₂ have been studied intensively, since they have diverse applications such as opto-electronic devices, photocatalysts, antireflection coatings for silicon solar cells, and photoanode materials for dye-sensitized solar cells (DSSC). Nanoporous TiO₂ thin films were spin-coated using surfactant-templated approach from Pluronic P123 (EO₂₀PO₇₀EO₂₀) as templating agent, titanium (IV) butoxide (Ti(OC₄H₉)) as the inorganic precursor, and butanol as the solvent. The refractive index and the thickness of thin films were valued by Spectroscopic ellipsometry (SE). Distributed Bragg Reflector (DBR) device was fabricated by continuous spin coating above sol solution and another sol solution containing (Ti(OC₄H₉)) butanol and HCl one after another. The reflectance of the thin films was measured and compared with the simulated results.