

Preparation and Water Splitting Activity of NaTaO₃ Photocatalyst Prepared by Spray Pyrolysis

강현우¹, 임성남¹, 박승빈^{1,2,*}

¹한국과학기술원; ²초미세화학공정센터

(SeungBinPark@kaist.ac.kr*)

Effects of operating variable on the preparation activity of NaTaO₃ photocatalyst by spray pyrolysis were investigated for the optimum design and operation of the spray pyrolysis process. The photocatalytic activities of the prepared NaTaO₃ for water splitting under UV were examined in a slurry reactor. Temperatures of precursor preparation and spray pyrolysis, residence time of precursor in the pyrolysis furnace, loading ratio of co-catalyst (NiO), ratio of Na/Ta were chosen as governing variables for the preparation and evaluation of photocatalytic activity of NaTaO₃ powder. In considering the water splitting in a slurry reactor by using the prepared NaTaO₃, effects of concentrations of photocatalyst and a sacrificial agent (methanol) on the photocatalytic activity were studied in terms of apparent photocatalytic activity (APA) as well as quantum yield (QY). The optimum conditions were suggested for the maximum photocatalytic activity and preparation of NaTaO₃ within these experimental conditions.