

Preparation of Porous Titania with Bimodal Pore Size Distribution

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Porous titania photocatalyst with bimodal pore size distribution was prepared by spray pyrolysis and applied to the removal of chelating compounds such as Cu-EDTA. Polystyrene(PS) latex particles of 220nm and 50nm in diameter were used as templates. Mixed PS latex particle of 220nm and 50nm in diameter changed pore morphology of the photocatalyst from macropore to the mixed pores compared with only the PS latex of 220nm. XRD spectra, SEM image, TEM image, and N₂ adsorption/desorption method (BET equation and BJH model) were used to characterize the prepared catalysts. The photoactivity of the titania with the mixed pores was higher than that of the titania with macropore only when the surface areas are identical. This result indicates that the active sites are more easily accessible by the Cu-EDTA solution when the pore size distribution is bimodal.