Synthesis of TiO_2 nano particles in diffusion flame reactor

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Flame aerosol synthesis was employed to produce TiO2 nanoparticles by the oxidation reaction. The effects of process variables (fuel/O2 ratio, initial precursor concentration and total gas flow rate) on the particle size and the mass fraction of anatase/rutile in TiO2 were investigated. We found that increase in these process variables causes the larger size of TiO2 nanoparticle. The mass fraction of rutile in TiO2 enhances when the fuel/O2 ratio or total gas flow rate increases.