

Acetylacetonate 와 결합된 Ti 전구체로부터 BaTiO₃ 제조 및 유기 용매 분산 특성
 Preparation and dispersion of BaTiO₃ prepared in solution from
 acetylacetonate derived Ti precursor

Nimai Chand Pramanik, Sang Il Seok[†], Bok Yeop Ahn, Hoon Kim
 Korea Research Institute of Chemical Technology
 (seoksi@pado.kRICT.re.kr[†])

Preparation of BaTiO₃ has received much current interest because of its very high dielectric constant value. In this present study we described the preparation of BaTiO₃ nano-crystals in solution phase from acetylacetonate derived sols. Titanium tris-acetylacetonate [Ti(acac)₃]⁺ was slowly added into the aqueous solution Ba(OH)₂ and then it was stirred at 50–110°C for several hours. X-Ray diffraction studies of the air-dried samples showed that crystalline BaTiO₃ was formed in solution in presence of relatively high Ba(OH)₂ concentration. Microstructures of the samples studied by transmission electron microscopy (TEM) further supported the existence of BaTiO₃ in the polycrystalline form. The formation of crystalline BaTiO₃ was studied in terms of reaction temperature and the Ba/Ti molar ratio and a plausible mechanism was also proposed. Crystal sizes of the BaTiO₃, calculated from the XRD results were in the range 33–50 nm, while the average particle sizes, measured by dynamic light scattering method were found to be in the range 70–100 nm. The dispersion of the BaTiO₃ was studied in N-methyl-2-pyrrolidone at room temperature and it was observed that the dispersibility of BaTiO₃ crystals enhanced by the presence of acetylacetone.