

Effects of Amphiphilic Molecules on the Characteristics of Hematite Fine Particles Obtained from Thermolysis

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In the hydrolysis and condensation of inorganic precursors, amphiphilic molecules can act as structure directing agent through formation of their ordered structures in aqueous solution.

Ferric oxide particles were prepared by aging ferric nitrate aqueous solution at elevated temperature in the presence of amphiphilic molecules. Cetyltrimethyl ammonium bromide and Poly (akylene oxide) block copolymer were used as amphiphilic molecules having cationic and noionic hydrophilic group, respectively. The effects of ammonia addition, kind of surfactants, and aging temperature were investigated.

Composition of the resulting particles were analyzed by FT-IR, wide angle XRD. SAXS was used to investigate if ordered structure were formed in the resulting particles. BET surface area, N₂ adsorption-desorption isotherm and BJH pore diameter distribution were also used to analyze the internal structure of obtained particles. Particle morphology were observed by SEM and TEM images.