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Effect of Solution Composition on the Morphology of Synthesized β-Ga_2O_3 Particles

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Abstract. Micro- and nanoparticles of β-Ga_2O_3 are synthesized as a result of chemical reaction of an aqueous solution of gallium nitrate and various alkalis: ammonia, sodium, potassium, and lithium hydroxides. It is shown that particles morphology depends on the type and concentration of alkali. The use of microwave treatment of ammonia containing solutions made it possible to change the shape of particles from ellipsoidal to parallelepiped while maintaining their size. In contrast to the synthesis with ammonia, for other alkalis dispersed particles were obtained only at a ratio of alkali to gallium nitrate equal to 3, and these particles did not belong to the gallium oxide β-phase.

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