Solvothermal Synthesis of Gallium and Indium Nitrides Using Lithium Amide

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Results of the investigation of the reactions of $GaCl_3$, $InCl_3$ and InI_3 with $LiNH_2$ under solvothermal conditions in benzene, which lead to metal nitrides, are reported. GaN is obtained as a cubic phase or as a mixture of cubic and hexagonal phases, depending on temperature. The effect of the addition of surfactants on the formation of GaN was explored. InN products were always contaminated with indium metal, even at low reaction temperatures. The addition of excess $LiNH_2$ or the use of InI_3 instead of $InCl_3$ gave products with less In metal.

Key words: Gallium Nitride, Indium Nitride, Nanocrystal, Solvothermal Synthesis