

## Effect of Precursor's Grain Size on the Conversion of Microcrystalline Gallium Antimonide GaSb to Nanocrystalline Gallium Nitride GaN

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**Abstract :** A simple precursor system has been recently developed in our laboratory for the conversion of affordable microcrystalline gallium antimonide GaSb to a range of nanocrystalline powders of gallium nitride GaN - a wide bandgap semiconductor indispensable in modern optoelectronics. The process relies on high temperature nitridation reactions of GaSb with ammonia. Topochemical relationships set up by the cubic lattice of GaSb result in some metastable cubic GaN formed in addition to the stable hexagonal GaN. A prior application of high energy ball milling to the initially microcrystalline GaSb precursor is shown to alter the nitridation output.

**Keywords :** nanocrystalline, gallium nitride, GaN, gallium antimonide, GaSb, nitridation, ball milling

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