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Doping in bulk HVPE-GaN grown on native seeds - highly conductive and semi-insulating crystals

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Abstract:

Results of gallium nitride crystallization on native seeds by Hydride Vapor Phase Epitaxy method are described. The seeds are high quality ammonothermal GaN crystals. Properties of unintentionally doped HVPE-GaN are briefly presented. A review on doping with donors and acceptors is prepared. Intentional incorporation of silicon or germanium is proposed in order to grow highly conductive HVPE-GaN. Carbon, iron, or manganese was introduced to increase the resistivity of crystallized material. GaN samples with different dopants are described in terms of their structural, optical, and electrical properties.

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