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## Impact of Elastic Stress on Crystal Phase of GaP Nanowires

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In most cases, III–V compounds form a crystal structure, which is stable under certain experimental conditions. Meantime crystal phase of III–V nanowires may differ from the stable phase of bulk structures. In this work, we show that the elastic stress could be the sole factor responsible for nanowire growth in the metastable phase. Depending on the experimental conditions of GaP nanowire growth, the elastic stress contribution to nucleation barrier can be greater than the difference in the energy of the formation of the cubic and hexagonal phase, and thus, it causes the growth in metastable wurtzite crystal phase.

**Keywords:** nanowire, phosphide, polytypes, elastic strain.