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Short-range In-segregation in InGaN and InAlN. Band structure and light emission related effects.

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Abstract
GaN and InGaN heterostructures with AlN and InAlN layers. Ab-initio calculations of the band structure and modifications caused by In-segregation and compared with optical experiments. InGaN and InAlN ternary alloys. Si on GaN mismatched substrates other than GaN. Si significantly enhances tendencies to In-segregation. In the second part of the seminar I will discuss the growth of large, high quality GaN crystals is very difficult. This is a direct consequence of thermodynamical factors. Two high pressure methods (High Pressure Synthesis of GaN from Liquid Gallium and Ammonothermal Growth enabling production of high quality GaN crystals will be discussed.

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Photograph by Xiaodong Hu