

Modulated semiconductor structures of magnetically doped nitrides**Alberta Bonanni***Institut für Halbleiter- und Festkörperphysik, Johannes Kepler University, Linz - Austria*

We discuss the surprising interplay between the distribution of magnetic ions and shallow impurities in group III nitrides, that allows to control the magnetic and optical properties in these systems, including the activation of a strong broad-band infrared emission [1]. In particular, we summarize how - by exploiting also synchrotron-radiation and high-resolution microscopy techniques - we have unraveled a number of non-anticipated features of these systems, like the nature of superexchange ferromagnetic interactions and the self-aggregation of magnetic cations and impurity complexes driven by fabrication parameters and co-doping [1-6].

Furthermore, we introduce the architecture and epitaxy of nitride-based spin filtering magnetic-insulator/semiconductor quantum layered structures.

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