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The influence of growth temperature on the nitrogen incorporation into MBE-grown GaInNAs-on-GaAs epilayers E.-M. PAVELESCU, M. PESSA, J. KONTTINEN, M. DUMITRESCU, Optoelectronics Research Centre, P.O. Box 692, Tampere University of Technology, 33100, Tampere, J. WAGNER, Fraunhofer-Institut fr Angewandte Festkrperphysik, Tullastrasse 72, D-79108 Freiburg, Germany, R. KUDRAWIEC, J. MISIEWICZ, Institute of Physics, Wroclaw University of Technology Wybrzeze Wyspianskiego 27, 50-370 Wroclaw, Poland, J. WAGNER COLLABORATION, R. KUDRAWIEC COLLABORATION — We have studied the influence of growth temperature (within the 410-470 ^{o}C range) on the nitrogen incorporation into lattice-matched GaInNAs-on-GaAs epilayers grown by molecular-beam epitaxy under constant fluxes. It was found that, over the whole temperature range, nitrogen is incorporated both on substitutional sites and as dimers on Ga and As sites. On substitutional sites nitrogen is present in the form of N-Ga_4 clusters and, to a lesser extent, in the form of N-Ga_3In ones. Increasing the growth temperature reduces the amount of substitutional nitrogen and increases the ratio between the N-Ga_3In and N-Ga_4 clusters. At the same time, the band gap increases. The amount of nitrogen dimers also decreases with increased growth temperature but the ratio between nitrogen dimers and nitrogen substitutionals appears not to be affected by the growth temperature. The effects of annealing on the incorporated nitrogen are discussed in the paper.

Emil-Mihai Pavelescu
ORC, Tampere University of Technology

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