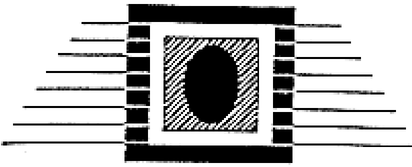

ELECTRONIC MATERIALS TECHNOLOGY NEWS

A BCC, Inc. Publication • 25 Van Zant St., Norwalk, CT 06855-1781 • 203/853-4266 • FAX: 203/853-0348

Northwestern Pushes Nitride Research

Manijeh Razeghi's extensive research program at Northwestern University (MLSB Room 4051, 2225 N. Campus Drive, Evanston, IL 60208; Tel: 847/491-7251, Fax: 847/467-1817) has turned in yet more results from its nitride-materials growth program. The August 11 issue of *Applied Physics Letters* featured an investigation into ternary aluminum indium nitride (ALInN) grown by metalorganic chemical vapor deposition.

The team found the material to have a band-gap energy of 5.26 eV, previously reported to be near that of gallium nitride (GaN) (3.4 eV), where the aluminum content was 0.92 to indium's 0.08. Thus, the team feels the material could be used effectively as a barrier material for GaN.

A second work, published in the June issue of the *Journal of Korean Physical Society*, found that screw and mixed dislocations could be held below $10^7/cm^2$ in GaN/AlGaN heterostructures grown on basal-plane sapphire. The researchers grew a double heterostructure consisting of 0.7 micron $Al_{0.33}Ga_{0.67}N$ layer sandwiched between two 0.6 micron GaN layers.

They found that most of the dislocations were stopped at the second GaN/AlGaN interface and reasoned that the reversal of stress from compressive to tensile and back to compressive creates misfit dislocations that annihilate the threading dislocations. A 15-period superlattice of the same materials did not reduce the dislocations densities, as the layers were thought to be too thin (50 angstroms) to modify the stress profile.