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Polarization induced doping in graded AlGaN films MORGAN WARE, SHIBIN LI, VASYL KUNETS, MICHAEL HAWKRIDGE, PAUL MINOR, JIANG WU, GREGORY SALAMO, Arkansas Institute for Nanoscale Materials Science and Engineering, University of Arkansas — The fixed polarization field which is intrinsic to nitride based III-V semiconductors in the wurtzite crystal phase can be manipulated during growth by varying the alloy composition. We report on initial experiments to use the space charge field which results from changing the internal polarization field of graded AlGaN films in a simple p-n junction device. Our devices are fabricated from films which are graded from GaN to AlGaN then reverse graded back to GaN without the intentional addition of impurity dopants. Structural characterization of the films is reported through X-Ray diffraction rocking curves and reciprocal space maps, and the rectifying behavior of the device is demonstrated through temperature dependent I-V measurements.

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