Abstract Submitted
for the SES05 Meeting of
The American Physical Society

**MgCaO Dry Etching on GaN** M. HLAD, L. VOSS, B.P. GILA, C.R. ABERNATHY, S.J. PEARTON, Department of Materials Science and Engineering, University of Florida, F. REN, Department of Chemical Engineering, University of Florida — MgCaO films grown by rf plasma-assisted Molecular Beam Epitaxy and capped with $Sc_2O_3$ are promising candidates as surface passivation layers and gate dielectrics on GaN-based high electron mobility transistors (HEMTs) and metal-oxide semiconductor HEMTs (MOS-HEMTs) respectively. Two different plasma chemistries were examined for etching these thin films on GaN. Inductively Coupled Plasmas of $CH_4/H_2/Ar$ produced etch rates only in the range 20-70 Å/min, comparable to the Ar sputter rates under the same conditions. Similarly slow MgCaO etch rates ($\sim$100 Å/min) were obtained with $Cl_2/Ar$ discharges under the same conditions, but GaN showed rates almost an order of magnitude higher. The MgCaO removal rates are limited by the low volatilities of the respective etch products. The $CH_4/H_2/Ar$ plasma chemistry produced a selectivity of around 2 or etching the MgCaO with respect to GaN.

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Date submitted: 04 Aug 2005 Electronic form version 1.4