

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Properties of YMnO₃ Self-assembled Nanocrystalline Prisms on GaN¹ CAMERON KEENAN, SANDEEP CHANDRIL, THOMAS H. MYERS, DAVID LEDERMAN, Dept of Physics, West Virginia University, ESTEBAN RAMOS-MOORE, ALEJANDRO L. CABRERA, Facultad de Fisica, Pontificia Universidad Catolica de Chile — The high-temperature (850 °C) molecular beam epitaxy deposition of YMnO₃ on HVPE GaN(0001) resulted in the spontaneous formation of YMnO₃ nanoprism structures due to Stranski-Krastanow growth mode. Their dimensions ranged from 20 nm to 60 nm in thickness and 50 nm to 500 nm in lateral size. The local dielectric properties of the sample were investigated using scanning surface potential microscopy (SSPM). Remanent hysteresis loops were used to compare the switching properties of the nanoprisms and underlying film. A larger remanence was observed for the prisms, most probably due to the lack of surrounding film areas that would clamp the ferroelectric response. As a result, the remanent polarization increased roughly linearly with increasing prism surface area.

¹This work was funded by ONR (Grant N00014-02-1-0974), the AFOSR (MURI grant F49620-03-1-0330), and NSF (CIAM-DMR grant 0502825) at WVU and by FONDECYT (grant 1060634) at PUC.

David Lederman
West Virginia University

Date submitted: 14 Dec 2007

Electronic form version 1.4