Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Indium nitride growth on Si(100) by femtosecond pulsed laser deposition MOHAMED HAFEZ, HANI ELSAYED-ALI, Old Dominion University — Deposition of indium nitride (InN) on Si(100) is performed under ultrahigh vacuum with an amplified Ti:sapphire laser (130 fs) operating at a wavelength of 800 nm. The objective is to grow single crystal InN films on Si(100). An intermediate layer of indium on Si(100)-(2×1) is prepared to avoid surface nitridation and decrease the lattice mismatch between the InN and Si(100). Reflection high-energy electron diffraction (RHEED) is used in situ during the deposition to study the growth dynamics and the surface structure of the grown films. Growth of indium on Si(100)-(2×1) by femtosecond pulsed laser deposition showed high-quality 2D films. The initial 2D indium layers on Si(100)-(2×1) formed in the In-(2×1) structure at room temperature and the In-(4×3) structure at a substrate temperature of 653-693 K. Growth of InN on the In-(2×1) and In-(4×3) buffer layer is discussed. The morphology of the InN films is examined by ex situ atomic force microscopy (AFM) and scanning electron microscopy (SEM).

Mohamed Hafez
Old Dominion University

Date submitted: 05 Dec 2005 Electronic form version 1.4