

Abstract Submitted  
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**High Mobility InN epilayers grown on AlN templates by MOCVD**  
NEELAM KHAN, ASHOK SEDHAIN, JING LI, JINGYU LIN, HONGXING  
JIANG, Department of Physics, Kansas State University, Manhattan, KS 66506-  
2601 — Among III-nitrides, InN has the smallest electron effective mass, the largest  
mobility and smallest direct band gap. These distinguished properties make InN  
an interesting material for the applications in high speed electronic devices and full  
color displays. However, obtaining InN and In-rich InGaN epilayers with control-  
lable conductivity is still a challenging task. We report here on the growth and  
transport property studies of InN epilayers on AlN templates, as compared to GaN  
templates. Significant improvements in the electrical and optical properties of InN  
epilayers were observed on AlN templates. A hall mobility of  $1390 \text{ cm}^2/\text{Vs}$  with a  
carrier concentration of  $1 \times 10^{19} \text{ cm}^{-3}$  at room temperature was observed, which is  
highest value reported for MOCVD grown InN epilayers. The photoluminescence  
emission spectra revealed band to band emission peak at  $\sim 0.75 \text{ eV}$ . The effects of  
post growth annealing on transport, structural and optical properties of undoped  
and Mg-doped InN epilayers will also be presented.

Neelam Khan  
Department of Physics, Kansas State University, Manhattan, KS 66506-2601

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