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EPIBLU LASER DIODE DEMONSTRATION - November 2017

RPCVD

Material	Thickness (nm)
GaN:Mg	50
$Al_{0.08}Ga_{0.92}N$:Mg	500
GaN:Mg	110

Growth Interruption

MOCVD

Material	Thickness (nm)
$Al_{0.2}Ga_{0.8}N$:Mg	20
MQW	-
GaN:Si	150
$Al_{0.07}Ga_{0.93}N$:Mg	1500
GaN:Si	1000
u-GaN	1000
SiN_x micro mask	-
u-GaN buffer	1000
Sapphire	-

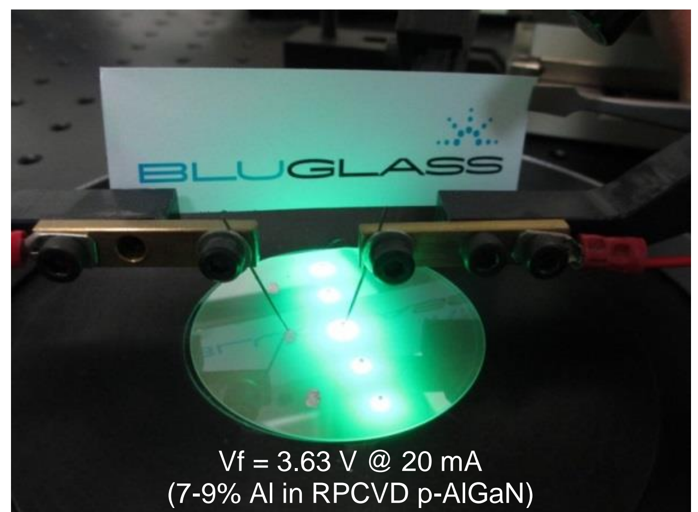
A partial green Laser Diode structure was grown using MOCVD on c-plane 2" planar sapphire, with the p-GaN and p-AlGaN cladding layers grown using RPCVD.

The lower temperature growth and higher activation efficiency of RPCVD-grown p-AlGaN enables the thick p-AlGaN layer to be grown without damaging the indium-rich InGaN layers, while maintaining a low Vf.

RPCVD p-AlGaN material was also overgrown on u-GaN templates enabling the electrical properties of the p-AlGaN to be characterised using Hall Effect measurements. High hole concentrations were obtained with 7-9% Al content.

Al % in RPCVD p-AlGaN	C.C. cm^{-3} (Hall Measurement)
2-3%	+3.3 E18
7-9%	+7.0 E17

Additional information on specialist nitride development and characterisation services as well as specific nitride device development services can be arranged to meet your individual requirements, please contact us for more information.



Vf = 3.63 V @ 20 mA
(7-9% Al in RPCVD p-AlGaN)

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