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**Effect of surface facets on the efficiency of InGaN/GaN quantum wells grown by molecular-beam epitaxy** HAIPENG TANG, SOUFIEN HAFFOUZ, JENNIFER BARDWELL, ROBIN WILLIAMS, SYLVAIN RAYMOND, JEAN LAPOINTE, National Research Council Canada — The pronounced enhancement of indium incorporation efficiency and quantum efficiency for InGaN/GaN quantum wells due to rough, faceted surface of the GaN templates is reported. We studied the growth of InGaN/GaN quantum wells by RF plasma MBE on two types of GaN templates, i.e. MOCVD GaN templates and ammonia- MBE GaN templates. The latter was grown in situ with a growth system equipped for both ammonia- MBE and RF plasma MBE. Unlike the smooth (0002) surface of GaN templates grown by MOCVD, the surface of the templates grown by ammonia-MBE is defined by $\{10\text{-}1m\}$ pyramidal facets causing significant surface roughness. Possible mechanisms for the enhanced indium incorporation efficiency due to these surface facets, such as the possible indium migration to the extremities of the facets forming quantum dots, are discussed. We also investigated InGaN/GaN quantum wells grown on selectively grown GaN micro-pyramids with well-defined {10-12} or {10-11} facets. Micro-PL measurements aimed at resolving the emissions from the quantum wells on the facets and quantum dots at the tips of the micro-pyramids will be discussed.

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