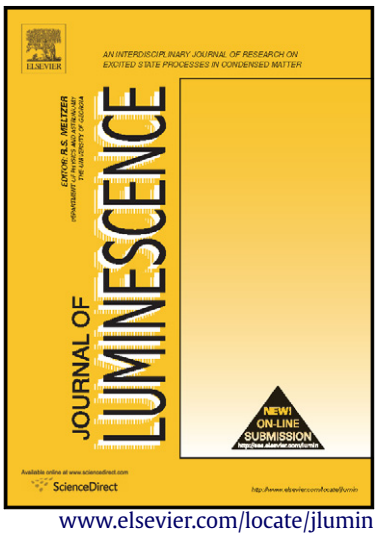

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Enhanced UV luminescence from InAlN quantum well structures using two temperature growth

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InAlN/AlGaN multiple quantum wells (MQWs) emitting between 300-350 nm have been prepared by metalorganic chemical vapour deposition on planar AlN templates. To obtain strong room temperature luminescence from InAlN QWs a two temperature approach was required. The intensity decayed weakly as the temperature was increased to 300 K, with ratios $I_{PL}(300\ K)/I_{PL}(T)_{max}$ up to 70%. This high apparent internal quantum efficiency is attributed to the exceptionally strong carrier localization in this material, which is also manifested by a high Stokes shift (0.52 eV) of the luminescence. Based on these results InAlN is proposed as a robust alternative to AlGaN for ultraviolet emitting devices.

Keywords: InAlN, quantum well, photoluminescence, carrier localization, Stokes shift.

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