

## Investigation of the effect of indium and arsenic on the photoluminescence properties of InGaPN and GaAsPN solar cell

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Concentrated multi-junction solar cells (MJSC) which are grown by either molecular beam epitaxy (MBE) or metalorganic vapour phase epitaxy (MOVPE) have the highest efficiencies of photovoltaic (PV). The optical properties of both bulk GaAsPN and InGaPN, which are grown on GaP have been investigated using photoluminescence (PL) for solar cell applications and compared with that of GaPN layers. The target energy has to be reached is 1.7~1.8 eV for solar cells. InGaPN shows a great PL intensity at this energy under 140K. Indeed, S-shape was observed which is mainly due to the fluctuation of band gap energy related to In and N content. In contrast, GaAsPN presents lower intensity at the same

conditions. GaAsPN presented poor behaviour at room temperature. Rapid thermal annealing (RTA) under 800 °C for 5 minutes was done to both samples to carry out the effect of it. RTA helps to treat the PL intensity by improve it but the energy peak is red shifted.

### Biography

Hind Albalawi is a PhD Researcher at University of Nottingham, UK. She completed her MSc in Renewable Energy and Architecture at Nottingham University, UK. She is working mainly on semiconductors for solar cells.

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