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**Auger recombination in InN from first principles**[1] ANDREW MCALLISTER, EMMANOUIL KIOUPAKIS, Univ of Michigan - Ann Arbor — Group-III Nitride materials are used in numerous electronic and optoelectronic devices including solid-state lighting, energy conversion, sensor technologies, and high-power electronics. Indium nitride in particular is interesting for fast electronics and optoelectronics in the infrared. Auger recombination is a non-radiative carrier recombination process that would limit the efficiency of these devices. The small band gap (0.7 eV) and the high intrinsic free-electron concentrations in InN possibly make Auger recombination particularly important in this material. We used first-principles computational methods to determine the Auger recombination rates in InN. Our results suggest that direct Auger recombination is dominant in this material and that phonon-assisted Auger processes are not as important as in wider-gap nitrides such as GaN.

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