US 20090173373A1

(19) United States

(12) Patent Application Publication

(10) Pub. No.: US 2009/0173373 A1

(43) Pub. Date: Jul. 9, 2009

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(54) GROUP III-NITRIDE SOLAR CELL WITH GRADED COMPOSITIONS

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(21) Appl. No.: **12/348,127**

(22) Filed: **Jan. 2, 2009**

Related U.S. Application Data

(60) Provisional application No. 61/019,536, filed on Jan. 7, 2008.

Publication Classification

(51) **Int. Cl.**
H01L 31/042 (2006.01)
H01L 31/00 (2006.01)

(52) **U.S. Cl.** **136/244**; 136/256

(57) **ABSTRACT**

A compositionally graded Group III-nitride alloy is provided for use in a solar cell. In one or more embodiment, an alloy of either InGaN or InAlN formed in which the In composition is graded between two areas of the alloy. The compositionally graded Group III-nitride alloy can be utilized in a variety of types of solar cell configurations, including a single P-N junction solar cell having tandem solar cell characteristics, a multijunction tandem solar cell, a tandem solar cell having a low resistance tunnel junction and other solar cell configurations. The compositionally graded Group III-nitride alloy possesses direct band gaps having a very large tuning range, for example extending from about 0.7 to 3.4 eV for InGaN and from about 0.7 to 6.2 eV for InAlN.