

Title (en)  
FORMATION OF A I-III-VI<sub>2</sub> SEMICONDUCTOR LAYER BY HEAT TREATMENT AND CHALCOGENIZATION OF AN I-III METALLIC PRECURSOR

Title (de)  
BILDUNG EINER I-III-VI<sub>2</sub>-HALBLEITERSCHICHT DURCH WÄRMEBEHANDLUNG UND CHALCOGENIERUNG EINES I-III-METALLISCHEN AUSGANGSSTOFFS

Title (fr)  
FORMATION D'UNE COUCHE SEMI-CONDUCTRICE I-III-VI<sub>2</sub> PAR TRAITEMENT THERMIQUE ET CHALCOGENISATION D'UN PRECURSEUR METALLIQUE I-III

Publication  
**EP 2992549 A1 20160309 (FR)**

Application  
**EP 14727872 A 20140430**

Priority  
• FR 1354112 A 20130503  
• FR 2014051030 W 20140430

Abstract (en)  
[origin: WO2014177809A1] The invention relates to the field of industrial processes for forming a semiconductor layer, especially with a view to photovoltaic applications, and more particularly to a process for forming a semiconductor layer of I-III-VI<sub>2</sub> type by heat treatment and chalcogenization of a metallic precursor of I-III type, the process comprising: - a heating step S1 under an inert atmosphere during which the temperature increases uniformly up to a first temperature T1 of between 460°C and 540°C, in order to enable the densification of the metallic precursor (2), and - a chalcogenization step S2 beginning at said first temperature T1 and during which the temperature continues to increase up to a second temperature T2, a stabilization temperature, of between 550°C and 600°C, in order to enable the formation of the semiconductor layer. The formation of a semiconductor layer, or equivalently of an absorber, having a gain in conversion efficiency of around 4%, is thus advantageously achieved.

IPC 8 full level  
**H01L 21/02** (2006.01); **H01L 21/36** (2006.01)

CPC (source: EP US)  
**F27B 9/10** (2013.01 - US); **F27D 7/06** (2013.01 - US); **H01L 21/02568** (2013.01 - EP US); **H01L 21/02614** (2013.01 - EP US); **H01L 21/67109** (2013.01 - US); **H01L 21/67248** (2013.01 - US); **H01L 21/677** (2013.01 - US); **H01L 31/0322** (2013.01 - US); **H01L 31/036** (2013.01 - US); **H01L 31/18** (2013.01 - US); **F27D 2007/063** (2013.01 - US); **F27D 2019/0093** (2013.01 - US); **Y02E 10/541** (2013.01 - EP)

Citation (search report)  
See references of WO 2014177809A1

Citation (examination)  
WO 2009105423 A1 20090827 - FILM SOLAR TECH INC [US], et al

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**WO 2014177809 A1 20141106**; CN 105531803 A 20160427; CN 105531803 B 20181127; EP 2992549 A1 20160309; FR 3005371 A1 20141107; FR 3005371 B1 20150529; JP 2016524319 A 20160812; JP 6467581 B2 20190213; US 2016079454 A1 20160317

DOCDB simple family (application)  
**FR 2014051030 W 20140430**; CN 201480036695 A 20140430; EP 14727872 A 20140430; FR 1354112 A 20130503; JP 2016511119 A 20140430; US 201414888786 A 20140430