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- (54) **Title:** METHODS FOR PRODUCING COMPLEX FILMS, AND FILMS PRODUCED THEREBY

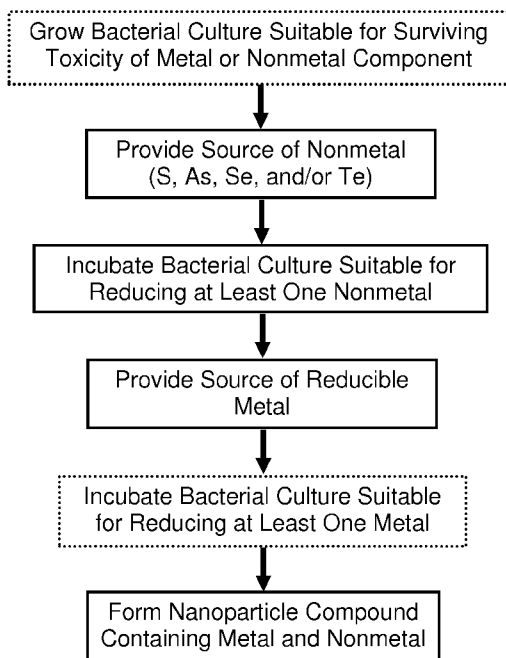


FIG. 1

(57) **Abstract:** A method for producing a film, the method comprising melting a layer of precursor particles on a substrate until at least a portion of the melted particles are planarized and merged to produce the film. The invention is also directed to a method for producing a photovoltaic film, the method comprising depositing particles having a photovoltaic or other property onto a substrate, and affixing the particles to the substrate, wherein the particles may or may not be subsequently melted. Also described herein are films produced by these methods, methods for producing a patterned film on a substrate, and methods for producing a multilayer structure.



AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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PCT/US2012/030049**A. CLASSIFICATION OF SUBJECT MATTER****H01L 31/042(2006.01)i, H01L 31/0749(2012.01)i, H01L 31/18(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKOMPASS(KIPO internal) & Keywords: CIGS, precursor, annealing

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	KR 10-2010-0016544 A (NANO CO TECHNOLOGIES LTD.) 12 February 2010	1-51
X	See abstract, paragraphs [0016]-[0017], [0042]-[0045], claim 1 and figures 1-2.	52-62
A	US 2007-0207565 A1 (TOIVO T. KODAS et al.) 06 September 2007	1-62
	See abstract, paragraph [0075] and figure 1.	
A	US 2007-0163638 A1 (JEROEN K.J.VAN DUREN et al.) 19 July 2007	1-62
	See abstract and claims 1, 32.	

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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