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[Continued on next page]

(54) **Title**: NANOSCALE HIGH-ASPECT-RATIO METALLIC STRUCTURE AND METHOD OF MANUFACTURING SAME

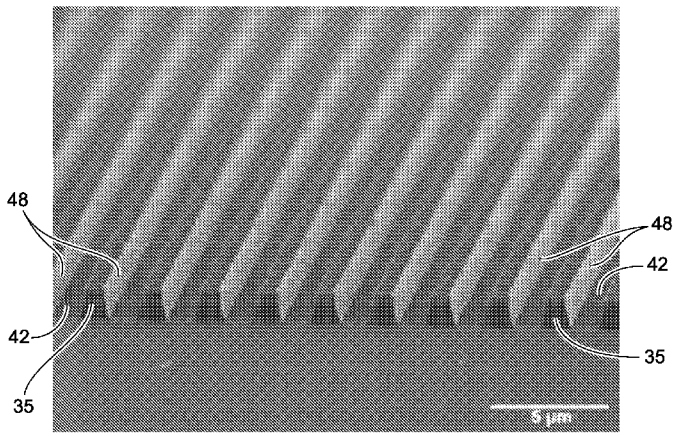

FIG. 4

(57) **Abstract**: Nanoscale high-aspect-ratio metallic structures and methods are presented. Such structures may form transparent electrode to enhance the performance of solar cells and light-emitting diodes. These structures can be used as infrared control filters because they reflect high amounts of infrared radiation. A grating structure of polymeric bars affixed to a transparent substrate is used. The sides of the bars are coated with metal forming nanowires. Electrodes may be configured to couple to a subset of the rails forming interdigitated electrodes. Encapsulation is used to improve transparency and transparency at high angles. The structure may be inverted to facilitate fabrication of a solar cell or other device on the back-side of the structure. Multiple layered electrodes having an active layer sandwiched between two conductive layers may be used. Layered electro-active layers may be used to form a smart window where the structure is encapsulated between glass to modify the incoming light.

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A. CLASSIFICATION OF SUBJECT MATTER

H01L 31/042(2006.01)i, H01L 31/0224(2006.01)i, H01L 33/36(2010.01)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)

H01L 31/042; H01L 21/027; H05K 3/06; C08G 65/331

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: PDMS,mold,polyurethane

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2009-543340 A (E.I. DU PONT DE NEMOURS AND COMPANY) 03 December 2009 See abstract and figures 1-5.	1-36
A	KR 10-2006-0135308 A (LG.PHILIPS LCD CO., LTD.) 29 December 2006 See abstract and figures 2-3.	1-36
A	KR 10-2009-0113681 A (DONGJIN SEMICHEM CO., LTD.) 02 November 2009 See abstract and figures 1-4.	1-36

☐ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents,such combination being obvious to a person skilled in the art
"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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KR 10-2009-0113681 A	02.11.2009	None	