

Title (en)

APPLICATIONS OF NANO-ENABLED LARGE AREA MACROELECTRONIC SUBSTRATES INCORPORATING NANOWIRES AND NANOWIRE COMPOSITES

Title (de)

ANWENDUNG VON NANO-BEREITEN GROSSFLÜCHIGEN MAKROELEKTRONISCHEN SUBSTRATEN MIT NANOLEITUNGEN UND NANOLEITUNGSZUSAMMENSETZUNGEN

Title (fr)

APPLICATIONS DE SUBSTRATS MACRO-ELECTRONIQUES DE GRANDE SURFACE NANO-ACTIVES INCORPORANT DES NANOFILS ET DES COMPOSITES DE NANOFIL

Publication

EP 1563555 A4 20090826 (EN)

Application

EP 03799305 A 20030930

Priority

- US 0330637 W 20030930
- US 41432302 P 20020930
- US 46827603 P 20030507
- US 47406503 P 20030529
- US 49300503 P 20030807

Abstract (en)

[origin: WO2004032191A2] Macroelectronic substrate materials incorporating nanowires are described. These are used to provide underlying electronic elements (e.g., transistors and the like) for a variety of different applications. Methods for making the macroelectronic substrate materials are disclosed. One application is for transmission an reception of RF signals in small, lightweight sensors. Such sensors can be configured in a distributed sensor network to provide security monitoring. Furthermore, a method and apparatus for a radio frequency identification (RFID) tag is described. The RFID tag includes an antenna and a beam-steering array. The beam-steering array includes a plurality of tunable elements. A method and apparatus for an acoustic cancellation device and for an adjustable phase shifter that are enabled by nanowires are also described.

IPC 1-7

C01B 31/02; H03H 11/20; H01L 29/06; H01L 21/00

IPC 8 full level

C01B 31/02 (2006.01); **G01V 15/00** (2006.01); **G06K 19/077** (2006.01); **H01L 21/00** (2006.01); **H01L 21/04** (2006.01); **H01L 21/335** (2006.01); **H01L 27/20** (2006.01); **H01L 29/06** (2006.01); **H01L 31/0352** (2006.01); **H01L 51/00** (2006.01); **H01Q 3/36** (2006.01); **H03H 11/20** (2006.01); **H04R 3/00** (2006.01)

IPC 8 main group level

H01L (2006.01)

CPC (source: EP)

B82Y 10/00 (2013.01); **G06K 19/07749** (2013.01); **H01L 21/02603** (2013.01); **H01L 21/02628** (2013.01); **H01L 29/0665** (2013.01); **H01L 29/0673** (2013.01); **H01L 29/42392** (2013.01); **H01L 29/66439** (2013.01); **H01L 31/035281** (2013.01); **H01P 1/184** (2013.01); **H10K 85/221** (2023.02); **H10N 39/00** (2023.02); **H01L 2224/16227** (2013.01)

Citation (search report)

- [A] US 4843358 A 19890627 - MEISE WILLIAM H [US], et al
- [DA] WO 0103208 A1 20010111 - HARVARD COLLEGE [US], et al
- [DA] WO 0248701 A2 20020620 - HARVARD COLLEGE [US]
- [DA] WO 0217362 A2 20020228 - HARVARD COLLEGE [US], et al
- [A] YI CUI ET AL: "Functional nanoscale electronic devices assembled using silicon nanowire building blocks", SCIENCE, AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, US, WASHINGTON, DC, vol. 291, no. 5505, 2 February 2001 (2001-02-02), pages 851 - 853, XP002243694, ISSN: 0036-8075
- [DA] YU HUANG ET AL: "Gallium nitride nanowire nanodevices", NANO LETTERS, ACS, WASHINGTON, DC, US, vol. 2, no. 2, 1 February 2002 (2002-02-01), pages 101 - 104, XP002243695, ISSN: 1530-6984
- [DA] X. DUAN, Y. HUANG, Y. CUI, J. WANG, C. M. LIEBER: "Indium phosphide nanowires as building blocks for nanoscale electronic and optoelectronic devices", NATURE, vol. 409, 4 January 2001 (2001-01-04), pages 66 - 69, XP002536811
- [A] CUI Y ET AL: "DOPING AND ELECTRICAL TRANSPORT IN SILICON NANOWIRES", JOURNAL OF PHYSICAL CHEMISTRY. B, MATERIALS, SURFACES, INTERFACES AND BIOPHYSICAL, WASHINGTON, DC, US, vol. 104, no. 22, 8 June 2000 (2000-06-08), pages 5213 - 5216, XP009071549, ISSN: 1089-5647
- [PA] WHANG DONGMOK ET AL: "Large-scale hierarchical organization of nanowires for functional nanosystems", JAPANESE JOURNAL OF APPLIED PHYSICS, JAPAN SOCIETY OF APPLIED PHYSICS, TOKYO,JP, vol. 43, no. 7 B, 1 July 2004 (2004-07-01), pages 4465 - 4470, XP002413447, ISSN: 0021-4922
- [PA] DUAN X ET AL: "HIGH-PERFORMANCE THIN-FILM TRANSISTORS USING SEMICONDUCTOR NANOWIRES AND NANORIBBONS", NATURE, NATURE PUBLISHING GROUP, LONDON, UK, vol. 425, no. 6955, 18 September 2003 (2003-09-18), pages 274 - 278, XP008050863, ISSN: 0028-0836
- [PA] A. TAO, F. KIM, C. HESS, J. GOLDBERGER, R. HE, Y. SUN, Y. XIA, P. YANG: "Langmuir-Blodgett silver nanowire monolayers for molecular sensing using surface-enhanced raman spectroscopy", NANO LETTERS, vol. 3, no. 9, 8 February 2003 (2003-02-08), pages 1229 - 1233, XP002536867
- See references of WO 2004032191A2

Designated contracting state (EPC)

AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IT LI LU MC NL PT RO SE SI SK TR

DOCDB simple family (publication)

WO 2004032191 A2 20040415; WO 2004032191 A3 20050602; AU 2003277033 A1 20040423; AU 2003277033 A8 20040423; CA 2499950 A1 20040415; EP 1563555 A2 20050817; EP 1563555 A4 20090826; EP 2218681 A2 20100818; EP 2261174 A2 20101215; JP 2006501690 A 20060112; TW 200416785 A 20040901; TW I319201 B 20100101

DOCDB simple family (application)

US 0330637 W 20030930; AU 2003277033 A 20030930; CA 2499950 A 20030930; EP 03799305 A 20030930; EP 10165017 A 20030930;
EP 10165018 A 20030930; JP 2005500328 A 20030930; TW 92127018 A 20030930