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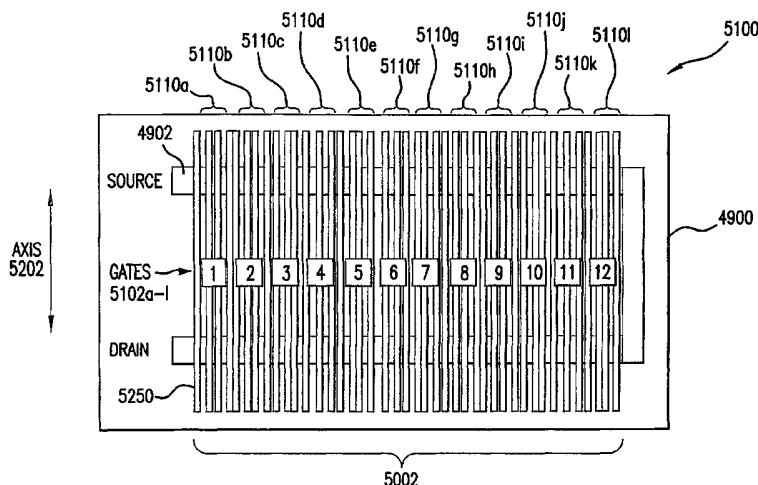
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(54) Title: APPLICATIONS OF NANO-ENABLED LARGE AREA MACROELECTRONIC SUBSTRATES INCORPORATING NANOWIRES AND NANOWIRE COMPOSITES



(57) Abstract: Macroelectronic substrate materials (5100) incorporating nanowires (2002) are described. These are used to provide underlying electronic (5110) 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 or 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.

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**A. CLASSIFICATION OF SUBJECT MATTER**  
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**B. FIELDS SEARCHED**  
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
 East search: "See Attachment"

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
T	US 2003/0185741 A1 (Matyjaszewski et al.) 2 Oct. 2003, paragraphs 134 - 145	1, 11
A	US 6,107,910 A (Nysen), 22 Aug. 2000, Entire document	1-55
A	US 6,509,812 B2 (Sayyah), 21 Jan. 2003, Entire Document	1-55
A	US 2003/0189202 A1 (Li et al.) 9 Oct. 2003	67-68
X,P	US 2002/0180306 A1 (Hunt et al.) 5 Dec. 2002, paragraphs 42 - 64	67 - 68
X	US 2002/0117659 A1 (Lieber et al.) 29 Aug. 2002, paragraphs 77 - 162	67-68
A	US 2001/0024508 A1 (Croft, III) 27 Sept. 2001, Entire Document	56 - 66

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"P" document published prior to the international filing date but later than the priority date claimed	

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