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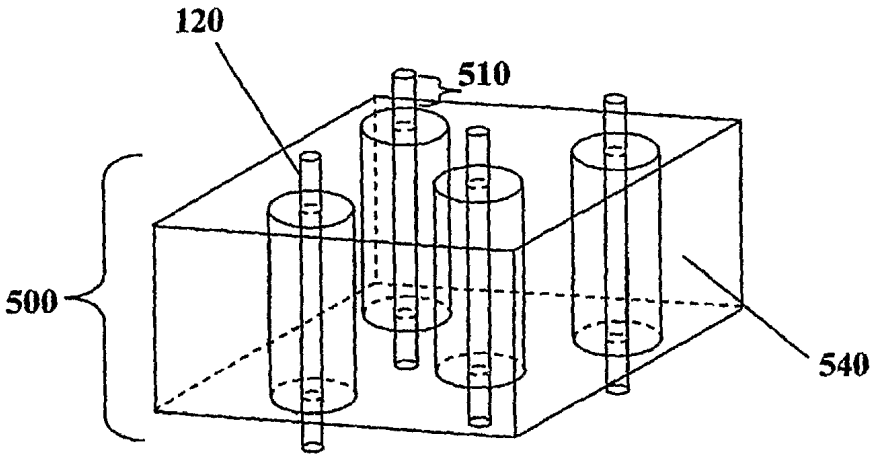
(54) Title: APPARATUS AND METHODS FOR OPTICAL SWITCHING USING NANOSCALE OPTICS



(57) Abstract: An apparatus and methods for optical switching using nanoscale optics are disclosed herein. A nano-optics apparatus (100) for use as an optical switch includes a metallic film (140) having a top surface, a bottom surface and a plurality of cylindrical channels (160) containing a dielectric material (180), the metallic film (140) acting as an outer electrode; and an array of non-linear optical components (120) penetrating the metallic film (140) through the plurality of cylindrical channels (160), the array acting as an array of inner electrodes.

WO 2007/025023 A3

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US06/33047

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - G02F 1/29 (2007.01)
USPC - 359/298
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)
IPC(8) - G02F 1/29; G02F 1/355 (2007.01)
USPC - 359/298-321; 385/15-23,122; 257/53; 977/834,932; 438/29; 216/24

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
Nanoelectronics and Information Technology, Rainer Waser (Ed.), 2003
Carbon Nanotubes: Science and Applications, M.Meyyappan, 2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
USPTO EAST System (US, USPG-PUB, EPO, JPO, FPRS, DERWENT), GoogleScholar, IP.com, DialogPro

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,515,325 B1 (FARNWORTH et al) 04 February 2003 (04.02.2003) Fig. 2I, column 5, lines 36-45	1, 2, 8
A	US 6,699,642 B2 (CHUNG et al) 02 March 2004 (02.03.2004) entire document	15,20
A	US 6,806,996 B2 (TATSUURA et al) 19 October 2004 (19.10.2004) entire document	1-14
A	US 2003/0042487 A1 (SARYCHEV et al) 06 March 2003 (06.03.2003) entire document	1-14
A	LIU et al. Third-order optical nonlinearity of the carbon nanotubes, Applied Physics Letters January 1999 Volume 74, Issue 2 pp. 164-166	1-20
A	MISEWICH et al. Electrically Induced Optical Emission from a Carbon Nanotube FET, Science 2 May 2003:Vol. 300. no. 5620, pp. 783 - 786	1-20
A	WANG et al. Receiving and transmitting light-like radio waves: Antenna effects in arrays of aligned carbon nanotubes, Applied Physics Letters Vol 85 No. 13 September 2004	1-20

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
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