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(74) Agent: **HENRY, Steven, J.**; Wolf, Greenfield & Sacks, P.C, 600 Atlantic Avenue, Boston, MA 02210 (US).

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(71) Applicant (for all designated States except US): **MASSACHUSETTS INSTITUTE OF TECHNOLOGY** [US/US]; 77 Massachusetts Avenue, Cambridge, MA 02139 (US).

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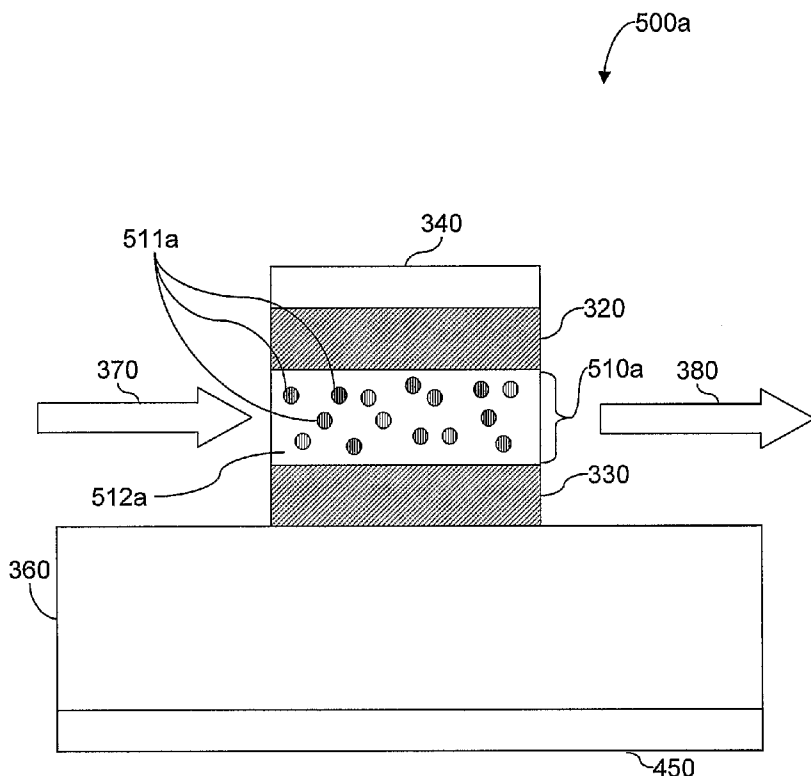
(72) Inventors; and

(75) Inventors/Applicants (for US only): **DOHRMAN, Carl** [US/US]; 174 Morrison Avenue, #2, Cambridge, MA 02144 (US). **FITZGERALD, Eugene, A.** [US/US]; 7 Camelot Road, Windham, NH 03087 (US). **GUPTA, Saurabh** [IN/US]; 305 Memorial Drive, #107 B, Cambridge, MA 02139 (US).

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(54) Title: ELECTRO-ABSORPTION MODULATOR DEVICE AND METHODS FOR FABRICATING THE SAME



(57) Abstract: An electro-absorption light intensity modulator device includes a first (320) and a second layer (330). The first layer includes an insulator, and the second layer is disposed relative to the first layer such that the two layers form cladding layers sandwiching a light-absorbing optical confinement region (510a). The light-absorbing optical confinement region includes at least one quantum-confined structure such as a plurality of quantum dots (511a). In one embodiment, quantum dots (511a) are surrounded by an oxide matrix (512a). In other embodiments, a multiple quantum well structure (MQW) is used. The quantum-confined structure (510a) possesses dimensions such that, upon an application of an electric field in the quantum-confined structure, light absorption is at least partially due to a transition of at least one carrier between a valence state and a conduction state of the quantum-confined structure. A method of fabricating an electro-absorption light intensity modulator device includes providing a first layer including an insulator, and disposing a second layer

relative to the first layer so as to confine light (370, 380) in the light-absorbing optical confinement region (510a).

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**INTERNATIONAL SEARCH REPORT**

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**A. CLASSIFICATION OF SUBJECT MATTER**  
INV. G02F1/017 H01L29/15

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

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)  
EPO-Internal, INSPEC

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002/066718 A1 (MATSUYAMA TAKAYUKI [JP]) 6 June 2002 (2002-06-06)  paragraphs [0087] - [0097]; figures 8A,8B paragraphs [0098] - [0111]; figures 9A-12B	1-3, 9-14,16, 17
X	US 6 771 410 B1 (BOURIANOFF GEORGE I [US] ET AL) 3 August 2004 (2004-08-03)  column 1, lines 28-55 column 6, line 60 - column 7, line 35; figures 4A,4B	1,4-6, 11-13, 15,18-21

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European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer

Cossu, Alessandro

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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X	<p>EP 0 154 504 A2 (EXXON RESEARCH ENGINEERING CO [US]) 11 September 1985 (1985-09-11) pages 5-8; figure 4 pages 11-12 pages 13-18; figure 7 pages 20-21; figure 10; example 1 pages 21-22; figures 11,12; example 2</p>	1-3, 7-14,16, 17,20-23
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