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(21) International Application Number: PCT/RU98/00178 (22) International Filing Date: 11 June 1998 (11.06.98) (30) Priority Data: <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">97109964</td> <td style="width: 40%;">13 June 1997 (13.06.97)</td> <td style="width: 30%;">RU</td> </tr> <tr> <td>97119146</td> <td>20 November 1997 (20.11.97)</td> <td>RU</td> </tr> <tr> <td>98102884</td> <td>17 February 1998 (17.02.98)</td> <td>RU</td> </tr> </table> (71) Applicant (for all designated States except US): MAIER OPTICAL RESEARCH AND TECHNOLOGIES GMBH [CH/CH]; Spiegelbergstrasse 7, CH-6318 Walchwil (CH). (72) Inventor; and (75) Inventor/Applicant (for US only): MAIER, Alexandr Alexandrovich [RU/RU]; ul. Chayanova, 14-58, Moscow, 125047 (RU). (81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CI, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG). Published <i>With international search report.</i> <i>Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>			97109964	13 June 1997 (13.06.97)	RU	97119146	20 November 1997 (20.11.97)	RU	98102884	17 February 1998 (17.02.98)	RU
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(54) Title: METHOD AND DEVICE FOR SWITCHING, AMPLIFICATION, CONTROLLING AND MODULATION OF OPTICAL RADIATION											
(57) Abstract The invention has improved parameters when compared with prior art devices; pump power was decreased by four orders and amplification of signal was increased by two orders. The main features of the invention are following. The nonlinear optical waveguide (1) is made on the basis of layered MQW-type structure, where unidirectional distributively coupled waves (I_p, I_s), e.g. coupled waves having orthogonal polarizations, interact. Wavelength of optical radiation is chosen close to wavelength of resonance in said structure. Input/output elements (10, 11, 12), taking into account the asymmetry of cross section of the nonlinear optical waveguide, are mounted at the input and output of the nonlinear waveguide making up a compact nonlinear-optic module. A small electrical current is injected across said nonlinear optical waveguide through the electrodes (2, 3), so as to increase gain and decrease pump optical power in high degree. The device contains also Peltier element and temperature sensor which help to obtain low predetermined critical power of pump radiation necessary for large signal gain and to set up necessary operation mode. The method of mounting and construction of optical elements of the device is also claimed. The technological reserves can improve already achieved record parameters. Application as all-optical transistor, all-optical switch, logic element and devices based thereon.											