

National Academy of Sciences of Ukraine  
Institute of Semiconductor Physics of NASU

*International Scientific Journal*

**SEMICONDUCTOR PHYSICS, QUANTUM ELECTRONICS AND OPTOELECTRONICS**

## Contents

- |    |   |    |   |
|----|---|----|---|
| 5  | <b>Many-body effects in photoluminescence of heavily doped AlGaAs/InGaAs/GaAs heterostructures</b><br><i>Z.Ya. Zhuchenko, G.G. Tarasov, S.R.Lavorik, Yu.I. Mazur, M.Ya. Valakh, H. Kissel, W.T. Masselink, U. Mueller, C. Walther</i>                                     | 55 | <b>Evaluation of the efficiency of interband radiative recombination in high quality Si</b><br><i>A.V. Sachenko, Yu.V. Kryuchenko</i>   |
| 10 | <b>Investigation of the undersurface damaged layers in silicon wafers</b><br><i>R.Yu. Holiney, L.A. Matveeva, E.F. Venger</i>   | 61 | <b>Optical constants of surface layer on gadolinium gallium garnet: ellipsometric study</b><br><i>A.I. Belyaeva, A.A. Galuza, T.G. Grebennik, V.P. Yuriyev</i>  |
| 13 | <b>Micro-Raman study of CN<sub>x</sub> composites subjected to high pressure treatment</b><br><i>N.I. Klyui, M.Ya. Valakh, V.G. Visotski, J. Pascual, N. Mestres, N.V. Novikov, I.A. Petrusha, M.A. Voronkin, N.I. Zaika</i>  | 66 | <b>On problem of the rigorous diffraction quantitative description</b><br><i>S. Anokhov</i>   |
| 19 | <b>Saddle point excitonic resonances in BiI<sub>3</sub> layered single crystals</b><br><i>O.O. Kudryavtsev, M.P. Lisitsa, F.V. Motsnyi, S.V. Virko</i>  | 70 | <b>Photoelectric peculiarities of electric photographic and holographic recording media with ionic dyes</b><br><i>N.A. Davidenko, A.A. Ishchenko</i>  |
| 23 | <b>Model of optical transitions in A<sub>2</sub>B<sub>6</sub> wurtzite type quantum dots</b><br><i>V.P. Kunets</i>  | 73 | <b>Chemical dissolution of indium arsenide in the Br<sub>2</sub>-HBr solutions</b><br><i>Z.F. Tomashik, S.G. Danylenko, V.N. Tomashik, M.Yu. Kravetski</i>  |
| 28 | <b>Anisotropy of ultrasonic waves propagation velocities in CdHgTe/CdTe</b><br><i>I. O. Lysiuk, V. F. Machulin, Ya. M. Olikh</i>  | 76 | <b>Pre- and postmelting of cadmium telluride</b><br><i>L.P. Shcherbak, P.I. Feichouk, Yu.A. Plevachouk, O.V. Kopach, L.T. Turyanska</i>   |
| 31 | <b>Characterization of Hg<sub>1-x</sub>Mn<sub>x</sub>Te single crystals and Hg<sub>1-x</sub>Mn<sub>x</sub>Te-based photodiodes</b><br><i>L.A. Kosyachenko, I.M. Rarenko, O.O. Bodnaruk, V.M. Frasunyak, V.M. Sklyarchuk, Ye.F. Sklyarchuk, Sun Weiguo, Lu Zheng Xiong</i> | 81 | <b>Crystals Cd<sub>1-x</sub>Zn<sub>x</sub>Te – a promising material for non-cryogenic semiconductor detectors: preparations, structure defectness and electrophysical properties</b><br><i>L.V. Atroshchenko, S.N. Galkin, L.P.Gal'chinetskii, A.I. Lalayants, I.A. Rybalka, V.D. Ryzhikov, V.I. Silin, N.G. Starzhinskii</i> |
| 37 | <b>Quaternary semimagnetic Hg<sub>1-x-y</sub>Cd<sub>x</sub>Mn<sub>y</sub>Se crystals for optoelectronic application</b><br><i>Yu.I. Mazur, G.G. Tarasov, E.V. Kuz'menko, A.E. Belyaev, W. Hoerstel, W. Kraak, W.T. Masselink</i>  | 86 | <b>Residual atmosphere in vacuum fluorescent displays</b><br><i>S.H. Finkelshtein, V.M. Sorokin, S.A. Rakitin, V.P. Sevostyanov</i>   |
| 46 | <b>Conductivity of a two-phase composite: An approach based on bounds</b><br><i>A.V. Goncharenko</i>  | 91 | <b>Development of personal biodosimeter of UV radiation based on vitamin D photosynthesis in nematic liquid crystal matrix</b><br><i>A. G. Dyadyusha, I. A. Gvozдовsky, E. N. Salkova, I. P. Terenetskaya</i>   |
| 51 | <b>Photogeneration of charge carriers in photosensitive organic semiconductors</b><br><i>Yu.M. Barabash, M.A. Zabolotny, N.I. Sokolov,</i>  |    |   |