

## Contents

Prosperity and difficulty of bulk crystal growth of semiconductor compounds (a review) <i>Peter Rudolph</i> .....	411
<b><i>Characterization and properties</i></b>	
Optical absorption and photoconductivity of ZnSe:Co single crystals <i>Yu.F.Vaksman, V.V.Pavlov, Yu.A.Nitsuk, Yu.N.Purtov, A.S.Nasibov, P.V.Shapkin</i> .....	426
Morphology and properties of new porous biocomposites based on biogenic hydroxyapatite and synthetic calcium phosphates <i>O.Sych, N.Pinchuk, A.Parkhomey, A.Kuda, L.Ivanchenko, V.Skorokhod, O.Vasylykiv, O.Getman, Y.Sakka</i> .....	430
Thermal factor effect on phase formation, structure, substructure features, and stress state in ion-plasma nano-crystalline condensates of quasi-binary WC–TiC carbide <i>O.V.Sobol'</i> .....	436
Control of refractive index and composition of TiO <sub>2</sub> thin film deposited by radiofrequency reactive sputtering <i>S.W.Kwon, W.S.Yang, H.M.Lee, W.K.Kim, H.-Y.Lee, W.J.Jeong, M.K.Song, D.H.Yoon</i> .....	446
The influence of BaF <sub>2</sub> on scintillation properties of PbWO <sub>4</sub> crystal <i>Youbao Wan, Jianxing Zhang, Rurong Wu, Sanfa Xing, Hui Yang</i> .....	450
X-ray photoelectron spectroscopy of nanopowders of ZrO <sub>2</sub> -Y <sub>2</sub> O <sub>3</sub> -Cr <sub>2</sub> O <sub>3</sub> compounds <i>A.M.Korduban, I.A.Yashchishyn, T.E.Konstantinova, I.A.Danilenko, G.K.Volkova, V.A.Glazunova</i> .....	454
Phase transformations at reduction of corundum <i>A.Ya.Dan'ko, M.A.Rom, N.S.Sidelnikova, Kh.Sh.Kaltaev, S.V.Nizhankovsky, A.I.Fedorov</i> .....	460
XRD and impedance spectroscopy study of phase transitions in nanocrystalline Li–Mn spinels <i>D.V.Lisovytskiy, V.N.Baumer</i> .....	468
Features of resonance absorption of longitudinal ultrasound in strained crystals KBr at temperature variations <i>A.M.Petchenko, G.A.Petchenko</i> .....	475
Magnetoresistance and magnetic susceptibility of doped Si–Ge whiskers <i>A.A.Druzhinin, I.P.Ostrovskii, Yu.R.Kogut, J.K.Warchulska</i> .....	480

Rotational viscosity of induced smectic C\* phase of liquid crystal  
*E.V.Popova, A.P.Fedoryako, V.V.Vashchenko, L.A.Kutulya* ..... 485

Liquid crystal formation in mixtures of metal alkanooates:  
gadolinium-containing binary systems  
*L.N.Zavora, V.D.Panikarskaya, N.A.Kasian, A.I.Bedrik,*  
*V.M.Shershukov, L.N.Lisetski, T.A.Mirnaya* ..... 488

**Modeling and simulation**

Simulation of phase diagrams in  $\text{LaNi}_5\text{-H}_2(\text{D}_2)$  system and inversion  
of isotopic effect  
*V.S.Marinin, Yu.F.Shmalko, K.R.Umerenkova* ..... 492

Twinning elements of 2<sup>nd</sup> order derived from crystal lattice parameters  
in central-symmetrical ferroelastics  
*D.I.Savytskii* ..... 498

Comparison of different rough surface models for computer simulation  
of light collection in a scintillator/light guide system  
*I.V.Kilimchuk, V.A.Tarasov* ..... 505

Influence of the director anchoring energy on a light induced Freedericksz transition  
threshold in the bounded light beams  
*A.A.Berezovskaya, S.N.Yezhov, M.F.Ledney, I.P.Pinkevych* ..... 510

Radiative conduction problem in the thin layer of semi-transparent medium.  
The weak absorption case  
*A.V.Kolesnikov, Yu.P.Virchenko* ..... 515

Nonlinear spin waves in antiferromagnets with uniaxial magnetic anysotropy  
in a magnetic field  
*O.Yu.Gorobets* ..... 521

**Technology**

Optical properties of  $\text{LiNbO}_3\text{:Zn}$  and  $\text{LiNbO}_3\text{:Zn:Nd}$  fiber single crystals grown  
by micro-pulling down method  
*H.J.Lee, J.W.Shur, O.Nakamura, D.H.Yoon* ..... 536

Thermal lag of the growth furnace heating assembly at  $\text{CsI}(\text{Na})$  crystal growing from  
constant melt volume on a seed  
*V.I.Goriletsky, V.V.Vasilyev, O.Ts.Sidletskiy,*  
*M.M.Tymoshenko, V.I.Sumin* ..... 541

Effect of growth atmosphere on  $\text{Ce}^{3+}$  incorporation in  $\text{Gd}_2\text{SiO}_5$  single crystals  
*V.G.Bondar, V.I.Krivoshein, [V.P.Martynov],*  
*L.L.Nagornaya, O.Ts.Sidletskiy* ..... 546

Structure perfection of bulk and near-surface layers in sapphire single crystals  
*V.F.Tkachenko, V.M.Puzikov, A.Ya.Dan'ko,*  
*A.T.Budnikov, O.A.Lukienko* ..... 550

Back surface reflector optimization for thin single crystalline silicon solar cells  
*V.R.Kopach, M.V.Kirichenko, S.V.Shramko, R.V.Zaitsev, I.T.Tymchuk,*  
*V.A.Antonova, A.M.Listratenko* ..... 555

Production of nano-pore track membranes based on PET films irradiated by Ar ions <i>V.A.Bomko, A.F.Burban, A.F.Kobets, A.Kryshtal, I.V.Vorobyova, B.V.Zajtsev</i> .....	562
Potentialities for sapphire strength enhancement <i>O.V.Voloshyn, L.A.Lytvynov, E.V.Slyunin</i> .....	569
Nanoscale Co/C multilayers for "carbon window" Schwarzschild objective <i>Ye.A.Bugayev, A.Yu.Devizenko, E.N.Zubarev, V.V.Kondratenko</i> .....	573
New approach to catalytic Co–W alloy electrodeposition <i>M.Ved, V.Shtefan, T.Bairachnaya, N.Sakhnenko</i> .....	580
Biphasic (HA/ $\beta$ -TCP) calcium phosphate ceramics <i>Z.Z.Zyman, N.V.Tkachenko, D.V.Polevodin</i> .....	585

**Personalia**

<i>Члену-корреспонденту НАН Украины А.В.Толмачеву – 60 лет</i> .....	591
<i>Author Index, Vol. 14, 1–4, 2007</i> .....	592