

5th International Congress on Energy Fluxes and Radiation Effects (EFRE 2016)

Journal of Physics: Conference Series Volume 830

Tomsk, Russia
2 – 7 October 2016

ISBN: 978-1-5108-4041-6
ISSN: 1742-6588

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2016) by the Institute of Physics
All rights reserved. The material featured in this book is subject to
IOP copyright protection, unless otherwise indicated.

Printed by Curran Associates, Inc. (2017)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

Table of contents

Volume 830

5th International Congress on Energy Fluxes and Radiation Effects 2016

2–7 October 2016, Tomsk, Russian Federation

Accepted papers received: 21 March 2017

Published online: 4 May 2017

Preface

011001

OPEN ACCESS

[5th International Congress on Energy Fluxes and Radiation Effects 2016](#)

011002

OPEN ACCESS

[Peer review statement](#)

Papers

HIGH-CURRENT ELECTRONICS

012001

OPEN ACCESS

[Run-away electron preionized diffuse discharge as a source of efficient laser emission in the IR, UV, VUV](#)

A N Panchenko, N A Panchenko and V F Tarasenko.....1

012002

OPEN ACCESS

[The effect of angular divergence and space charge on transmission of an electron beam through a magnetic mirror](#)

V T Astrelin, I V Kandaurov, V V Kurkuchekov, V M Sveshnikov and Yu A Trunev.....8

012003

OPEN ACCESS

[Amplitude-time characteristics of runaway electron beams during the breakdown phase in high-pressure gases](#)

V F Tarasenko.....15

012004

OPEN ACCESS

[The influence of the resonance effects on the radiative characteristics of helium plasma](#)

E V Koryukina and V I Koryukin.....20

012005

OPEN ACCESS

[4-kW multi-phase battery powered power supply](#)

A V Ponomarev, S R Korzhenevskiy, A A Komarskiy, A S Chepusov, Y I Mamontov and S V Ponomarev.....27

012006

OPEN ACCESS

[Novel control system of the high-voltage IGBT-switch](#)

A V Ponomarev, Y I Mamontov, A I Gusev and M S Pedos.....32

012007

OPEN ACCESS

[Parameters of runaway electron beam generated during excitation by nanosecond voltage pulses in short gaps filled with nitrogen](#)

D A Sorokin, V F Tarasenko and M I Lomaev.....37

012008

OPEN ACCESS

[Composition of pyrolysis gas from oil shale at various stages of heating](#)

S M Martemyanov, A A Bukharkin, I A Koryashov and A A Ivanov.....42

012009

OPEN ACCESS

[Mason's equation application for prediction of voltage of oil shale treeing breakdown](#)

S M Martemyanov.....47

012010

OPEN ACCESS

[Mitochondrial respiration inhibition after exposure to UWB pulses as a possible mechanism of antitumor action](#)

L Zharkova, I Romanchenko, M Bolshakov and V Rostov.....52

012011

OPEN ACCESS

[About the selection of transverse modes in the X-band oversized oscillator with 2.5 GW output power](#)

R V Tsygankov, V V Rostov, A V Gunin, A A Elchaninov, A B Markov and G E Ozur.....56

012012

OPEN ACCESS

[Synthesis of ultrawideband radiation of combined antenna arrays excited by nanosecond bipolar voltage pulses](#)

V I Koshelev, V V Plisko and E A Sevostyanov.....62

012013

OPEN ACCESS

[The Initial Stage of Neck Formation in an X-Pinch](#)

V I Oreshkin, A P Artyomov, S A Chaikovsky, E V Oreshkin and M M Tsventoukh.....67

012014

OPEN ACCESS

[Effect of emission on subnanosecond breakdown in a gas diode at low pressure](#)

E Kh Baksht, S Ya Belomytsev, A G Burachenko, A A Grishkov and V A Shklyayev.....72

012015

OPEN ACCESS

[25 keV electron beam formation based on a three-electrode system of the obstructed glow discharge in H₂ and D₂](#)

Yu S Akishev, V B Karalnik, M A Medvedev, A V Petryakov, N I Trushkin and A G Shafikov.....78

012016

OPEN ACCESS

[Investigation of thyristor-based switches triggered in impact-ionization wave mode](#)

A I Gusev, S K Lyubutin, S N Rukin, B G Slovikovsky and S N Tsyranov.....84

012017

OPEN ACCESS

[Experimental research of neutron yield and spectrum from deuterium gas-puff z-pinch on the GIT-12 generator at current above 2 MA](#)

R K Cherdizov, F I Fursov, V A Kokshenev, N E Kurmaev, A Yu Labetsky, N A Ratakhin, A V Shishlov, J Cikhardt, B Cikhardtova, D Klir, J Kravarik, P Kubes, K Rezac, G N Dudkin, A A Garapatsky, V N Padalko and V A Varlachev.....90

012018

OPEN ACCESS

[Hybrid MHD/PIC simulation of a deuterium gas puff z pinch](#)

D L Shmelev, V I Oreshkin and S A Chaikovsky.....95

012019

OPEN ACCESS

[Rail-type gas switch with preionization by an additional corona discharge](#)

O S Belozarov and E G Krastelev.....100

012020

OPEN ACCESS

[High power radiators of ultra-short electromagnetic quasi-unipolar pulses](#)

V M Fedorov, V E Ostashev, V P Tarakanov and A V Ul'yanov.....106

012021

OPEN ACCESS

[Linear transformer and primary low-inductance switch and capacitor modules for fast charging of PFL](#)

Yu A Bykov, E G Krastelev, G V Popov, A A Sedin and V F Feduschak.....114

012022

OPEN ACCESS

[Corona pre-ionized gas switches with an increased lifetime for Marx generator of the lightning test complex](#)

Yu A Bykov and E G Krastelev.....120

012023

OPEN ACCESS

[Pseudospark switches commutation depending on trigger characteristics](#)

A V Akimov, O V Anchugov, A F Baidak, P A Bak and D A Shvedov.....126

012024

OPEN ACCESS

[Generation of accelerated electrons in nanosecond electrical discharges using extensive slot cathodes limited by dielectric walls](#)

N A Ashurbekov, K O Iminov and A R Ramazanov.....130

012025

OPEN ACCESS

[Activation of the explosive-emission-cathode in conditions of artificial initiation of field emission](#)

S A Shunailov, M I Yalandin, K A Sharypov, M D Kolomiets, M R Ulmasculov, V G Shpak, V V Rostov and G A Mesyats.....137

012026

OPEN ACCESS

[The role of high-energy electrons in the formation of the transverse profile of high-speed ionization wave fronts in gases](#)

N A Ashurbekov, K O Iminov and G S Shakhshinov.....143

012027

OPEN ACCESS

[Gyromagnetic nonlinear transmission line generator of high voltage pulses modulated at 4 GHz frequency with 1000 Hz pulse repetition rate](#)

M R Ulmasculov, K A Sharypov, S A Shunailov, V G Shpak, M I Yalandin, M S Pedos and S N Rukin.....152

012028

OPEN ACCESS

[Oversized interference microwave switches with distributed power of a switching wave](#)

S N Artemenko, S A Gorev and V S Igumnov.....158

012029

OPEN ACCESS

[Numerical simulation of electrical explosions in megagauss magnetic fields](#)

V I Oreshkin, S A Chaikovsky, K V Khishchenko and E V Oreshkin.....162

012030

OPEN ACCESS

[Formation of long nanosecond rectangular pulses in the active RF pulse compression system with a compact resonant cavity](#)

S N Artemenko, S A Gorev, V S Igumnov and Yu G Yushkov.....167

012031

OPEN ACCESS

[Angular distribution of beam electrons in a source with arc plasma emitter](#)

V Kurkuchekov, V Astrelin, I Kandaurov and Yu Trunev.....175

012032

OPEN ACCESS

[Study of electron beam uniformity in large-area multi-aperture diode with arc plasma cathode](#)

I V Kandaurov, V V Kurkuchekov and Yu A Trunev.....181

012033

OPEN ACCESS

[Study of thin metallic film explosion in vacuum](#)

A S Zhigalin, A G Rousskikh, V I Oreshkin and R B Baksht.....187

012034

OPEN ACCESS

[RF pulse formation dynamics in gyromagnetic nonlinear transmission lines](#)

I V Romanchenko, P V Pripitnev and V V Rostov.....193

012035

OPEN ACCESS

[Pulsed plasma chemical synthesis of \$\text{Si}_x\text{C}_y\text{O}_z\$ composite nanopowder](#)

G Kholodnaya, R Sazonov, D Ponomarev and G Remnev.....197

012036

OPEN ACCESS

[Electron and phonon spectra dynamics and features of phase transitions in sodium at \$P=0-100\$ GPa](#)

N B Volkov and E A Chingina.....203

012037

OPEN ACCESS

[Wideband TEM-TE₁₁ mode convertor for HPM applications.](#)

D N Bykov, N M Bykov and I K Kurkan.....213

012038

OPEN ACCESS

[Radiographic research of the Bi plasma jet formed by the vacuum arc discharge](#)

A P Artyomov, A G Rousskikh, A V Fedunin, S A Chaikovsky, A S Zhigalin and V I Oreshkin.....217

012039

OPEN ACCESS

[High-intensity pulsed beam source with tunable operation mode](#)

A V Nashilevskiy, G G Kanaev, V V Ezhov and V I Shamanin.....222

012040

OPEN ACCESS

[Peculiarities of the ionized fronts formation and development in pre-ionized gas](#)

V S Kurbanismailov, O A Omarov, G B Ragimkhanov and D V Tereshonok.....227

012041

OPEN ACCESS

[Computer simulation of energy release modes in discharge channel and its influence on stress-strained state formation in solid material under electro-blasting technology](#)

A S Yudin, N V Voitenko and N S Kuznetsova.....232

012042

OPEN ACCESS

[Low-inductance switch and capacitor energy storage modules made of packages of industrial condensers IK50-3](#)

Yu A Bykov, E G Krastelev, A A Sedin and V F Feduschak.....237

012043

OPEN ACCESS

[Characteristics of capillary discharge channel and its effect on concrete splitting-off by electro-blasting method](#)

N S Kuznetsova, A S Yudin and N V Voitenko.....243

012044

OPEN ACCESS

[PIN-diode diagnostics of pulsed electron beam for high repetition rate mode](#)

Ivan Egorov, Yu Xiao and Artem Poloskov.....250

012045

OPEN ACCESS

[Macrophage and tumor cell responses to repetitive pulsed X-ray radiation](#)

M A Buldakov, M S Tretyakova, V B Ryabov, I A Klimov, O P Kutenkov, J Kzhyskowska, M A Bol'shakov, V V Rostov and N V Cherdyntseva.....255

012046

OPEN ACCESS

[Simulation of pre-breakdown phase of electrical discharge in reinforced concrete](#)

N S Kuznetsova, A S Yudin and N V Voitenko.....261

012047

OPEN ACCESS

[Design and testing of fluid resistor for repetitive high-voltage pulse generator](#)

A V Poloskov, I S Egorov and M A Serebrennikov.....267

012048

OPEN ACCESS

[High-current electron gun with a planar magnetron integrated with an explosive-emission cathode](#)

P P Kiziridi and G E Ozur.....272

MODIFICATION OF MATERIALS WITH PARTICLE BEAMS AND PLASMA FLOWS

012049

OPEN ACCESS

[Numerical simulation of the coaxial magneto-plasma accelerator and non-axisymmetric radio frequency discharge](#)

V V Kuzenov, S V Ryzhkov and P A Frolko.....276

012050

OPEN ACCESS

[Modernization of high-power \(5 kW\) broad ion beam source](#)

D R Emlin, N V Gavrilov, P V Tretnikov, V F Nasyrov and A Z Timerbaev.....282

012051

OPEN ACCESS

[Characteristics of cold atmospheric plasma source based on low-current pulsed discharge with coaxial electrodes](#)

O A Bureyev, Yu S Surkov and A V Spirina.....288

012052

OPEN ACCESS

[Generation of plasma flows by arc plasmatoms](#)

A S Anshakov, P V Domarov, V A Faleev and A A Danilenko.....293

012053

OPEN ACCESS

[Operational testing of self-heated cathode made from compacted TiN powder](#)

N V Gavrilov, A S Kamenetskikh, D S Koleukh, S N Pararin, V S Pasmurov and A V Spirin.....299

012054

OPEN ACCESS

[Low-pressure low-frequency inductive discharge with ferrite cores for large-scale plasma processing](#)

M V Isupov, A V Fedoseev, G I Sukhinin and V A Pinaev.....306

012055

OPEN ACCESS

[Effect of electron temperature on the distribution of plasma parameters on the phase planes for thermionic diode with low temperature emitter](#)

V P Zimin and T A Piskunova.....311

012056

OPEN ACCESS

[The one-particle approximation in the reflecting discharge simulation](#)

N N Schitov and D I Yurkov.....317

012057

OPEN ACCESS

[Plasma source based on an unbalanced magnetron sputtering system](#)

D P Borisov, V A Slabodchikov and V M Kuznetsov.....323

012058

OPEN ACCESS

[Analysis of work and efficiency increase of of the ILUR-03 installation magnetron system for tubular specimens outer surface modification](#)

B A Kalin, N V Volkov, R A Valikov, A S Yashin, V P Krivobokov, S N Yanin and Yu N Yuriev.....328

012059

OPEN ACCESS

[Plasma jet characteristics in vacuum arc with diffused cathode spot](#)

R Kh Amirov, N A Vorona, A V Gavrikov, G D Liziakin, V P Polistchok, I S Samoylov, V P Smirnov, R A Usmanov and I M Yartsev.....332

012060

OPEN ACCESS

[Propagation of atmospheric pressure helium plasma jet into ambient air at laminar gas flow](#)

M Pinchuk, O Stepanova, N Kurakina and V Spodobin.....338

012061

OPEN ACCESS

[Combined impact features for laser plasma generation](#)

E Loktionov, Yu Protasov and V Telekh.....344

012062

OPEN ACCESS

[Experimental Research of Dynamics and Macrostructure of Light Erosion Radiative Plasmodynamic Discharges](#)

A Pavlov, Y Protasov, V Telekh and T Tshepanuk.....350

012063

OPEN ACCESS

[Energy & mass-charge distribution peculiarities of ion emitted from penning source](#)

N V Mamedov, D V Kolodko, I A Sorokin, I A Kanshin and D N Sinelnikov.....356

012064

OPEN ACCESS

[Mass spectroscopy of the ion flux produced during inductively coupled plasma nitriding process](#)

D V Kolodko, A V Kaziev, D G Ageychenkov, E A Meshcheryakova, A A Pisarev and A V Tumarkin.....362

012065

OPEN ACCESS

[Study of parameters of a facility generating compressive plasma flows](#)

A Ya Leyvi.....366

012066

OPEN ACCESS

[Low temperature ion nitriding of Ti-6Al-4V alloy](#)

R D Agzamov, K N Ramazanov, A F Tagirov and E L Vardanyan.....372

012067

OPEN ACCESS

[Atomistic simulation of structural damage during ion irradiation of iron single crystals](#)

A V Korchuganov, K P Zolnikov and D S Kryzhevich.....377

012068

OPEN ACCESS

[Features of plastic deformation nucleation in the elastically loaded aluminium crystallites during irradiation](#)

D S Kryzhevich, A V Korchuganov, K P Zolnikov and S Y Korostelev.....382

012069

OPEN ACCESS

[Numerical study of heating and evaporation processes of quartz particles in RF inductively coupled plasma](#)

Yu M Grishin and Long Miao.....387

012070

OPEN ACCESS

[Modeling of the electron-beam boriding in the system Fe-B-C-O₂](#)

D E Dasheev and N N Smirnyagina.....393

012071

OPEN ACCESS

[Numerical study of mass transfer of a material under intense flows of high-speed electrons and plasma](#)

A Ya Leyvi and A P Yalovets.....400

012072

OPEN ACCESS

[Multiscale models of metal behaviour and structural change under the action of high-current electron irradiation](#)

A E Mayer, V S Krasnikov, P N Mayer and V V Pogorelko.....405

012073

OPEN ACCESS

[Modelling of local ion nitriding in a glow discharge with hollow cathode](#)

V Budilov, K Ramazanov and Yu Khusainov.....411

012074

OPEN ACCESS

[Influence of martensitic steel ultrafine-grained structure on diffusion processes at low-temperature ion nitriding](#)

K N Ramazanov, R S Esipov, E L Vardanyan and R D Agzamov.....417

012075

OPEN ACCESS

[Research of influence of mobile cathodic stains of the vacuum arc for reception of the adjustable roughness of metal surfaces](#)

V N Anikeev and M Yu Dokukin.....421

012076

OPEN ACCESS

[Refractory phases synthesis at the surface microalloying using a wide aperture electron beam](#)

S V Fedorov and Min Htet Swe.....427

012077

OPEN ACCESS

[Modification of optical and electrical properties of SnO₂ under the influence of argon ion beam](#)

S Umnov, O Asainov and V Temenkov.....433

012078

OPEN ACCESS

[Ion-plasma nitriding of austenitic steel in a low-pressure low-frequency inductive discharge with ferrite core](#)

M V Isupov, V A Pinaev, D O Mul and N S Belousova.....438

012079

OPEN ACCESS

[The Corrosion Behavior of Ni-Based Superalloy Irradiated by Intense Pulsed Ion Beam](#)

H W Zhong, J Zhang, X Yu, J Shen, G Y Liang, X J Cui, X F Zhang, G L Zhang, S Yan and X Y Le.....442

012080

OPEN ACCESS

[Effect of structural steel ion plasma nitriding on material durability in pulsed high magnetic fields](#)

A V Spirin, V I Krutikov, D S Koleukh, A S Mamaev, S N Paranin, N V Gavrilov and A S Kaigorodov.....447

012081

OPEN ACCESS

[Some properties of near-surface layer of graded-gap MBE HgCdTe after boron ion implantation](#)

A V Voitsekhovskii, S N Nesmelov, S M Dzyadukh and I I Izhnin.....455

012082

OPEN ACCESS

[Influence of a high-frequency pulsed nanosecond diffusion discharge in the nitrogen atmosphere on the electrical characteristics of a CdHgTe epitaxial films](#)

D Grigoryev, A Voitsekhovskii, A Korotaev, D Lyapunov, K Lozovoy, V Tarasenko, M Shulepov, M Erofeev, V Ripenko, S Dvoretiskii and N Mikhailov.....459

012083

OPEN ACCESS

[Electrical characteristics of epitaxial MCT after As⁺ implantation](#)

A Voitsekhovskii, I Izhnin, A Korotaev, D Lyapunov, S Dvoretiskii and P Smirnov.....463

012084

OPEN ACCESS

[Technology of treatment of building materials with the plasma torch](#)

R R Galeev, R T Nasibullin, A Sh Sadriev and R Sh Sadriev.....469

012085

OPEN ACCESS

[Legitimacies of the growth of oxide films on ion-modified samples from the alloy E110 at high-temperature oxidation](#)

B A Kalin, N V Volkov, R A Valikov, A S Yashin and D N Ignatiyev.....474

012086

OPEN ACCESS

[Irradiation of Fe-Mn Supersaturated Solid Solution with Ions of Various Atomic Masses \(Ar⁺, Xe⁺\) and Analysis of the Role of Nanosized Dynamic Effects in the Activation Processes of Long-Range Type](#)

V V Ovchinnikov, F F Makhin'ko, V A Semionkin and K V Shalomov.....478

012087

OPEN ACCESS

[Investigation of ceramics based on Cu-Sn powder obtained by plasma dynamic method](#)

Yu Shanenkova, A Sivkov, A Ivashutenko and A Tsimmerman.....484

012088

OPEN ACCESS

[Computer Analysis of the Field Ion Images of Platinum Irradiated with Ar⁺ \(E = 30 keV\) Ions](#)

V A Ivchenko and V V Ovchinnikov.....490

012089

OPEN ACCESS

[Effect of ion beam treatment \(Ar⁺, E = 30 keV\) on the microstructure of titanium alloys](#)

N V Gushchina, V V Ovchinnikov, F F Makhin'ko and S A Linnik.....496

012090

OPEN ACCESS

[Dynamics of titanium surface characteristics after its treatment by runaway electron preionized diffuse discharge](#)

M A Shulepov, M V Erofeev, V S Ripenko and V F Tarasenko.....502

012091

OPEN ACCESS

[Modelling of process formation of the nanocomposite TiN-Cu layers received by vacuum-arc evaporation of Ti and magnetron sputtering of Cu](#)

D B-D Tsyrenov, A P Semenov and N N Smirnyagina.....506

012092

OPEN ACCESS

[Study of diffusion influence on plasma channel while transporting a low-energy high intensity electron beam in the low pressure gas](#)

I L Zvigintsev and V P Grigoriev.....512

012093

OPEN ACCESS

[Creation of the nanostructured superhard and heatproof layers on die steels under influence of intensive electron beams in vacuum](#)

A Milonov, B Danzheevand and N Smirnyagina.....518

012094

OPEN ACCESS

[Nitriding of VT3-1 titanium alloy in a glow discharge with hollow cathode](#)

V.V. Budilov, K.N. Ramazanov, I.V. Zolotov, Yu. G. Khusainov and E.L. Vardanyan.....524

012095

OPEN ACCESS

[Hardening Roll Surface by Plasma Nitriding with Subsequent Hardfacing](#)

A Pesin, D Pustovoytov, R Vafin, I Yagafarov and E Vardanyan.....529

012096

OPEN ACCESS

[The gradient structure of the NiTi surface layers subjected to tantalum ion beam alloying](#)

S L Girsova, T M Poletika, L L Meisner and E Yu Schmidt.....535

012097

OPEN ACCESS

[Formation of Ti-Ta-based surface alloy on TiNi SMA substrate from thin films by pulsed electron-beam melting](#)

L L Meisner, A B Markov, G E Ozur, V P Rotshtein, E V Yakovlev, S N Meisner, T M Poletika, S L Girsova, V O Semin and Yu P Mironov.....540

012098

OPEN ACCESS

[Coating synthesis on dielectric substrates assisted by pulsed beams of high-energy gas atoms](#)

S N Grigoriev, Yu A Melnik and A S Metel.....546

012099

OPEN ACCESS

[Improvement of the magnetron sputtered coating adhesion through pulsed bombardment by high-energy ions](#)

Yu A Melnik and A S Metel.....552

012100

OPEN ACCESS

[Product surface hardening in non-self-sustained glow discharge plasma before synthesis of superhard coatings](#)

P S Krasnov, A S Metel and H A Nay.....557

012101

OPEN ACCESS

[Calcium phosphate coatings modified with zinc- or copper- incorporation on Ti-40Nb alloy](#)

E G Komarova, M B Sedelnikova, Yu P Sharkeev, A A Kazakbaeva, I A Glukhov and M A Khimich.....563

012102

OPEN ACCESS

[The dynamic sublayers for improving the adhesion of CVD diamond films on copper](#)

A V Gaydaychuk, S A Linnik and V V Okhotnikov.....569

012103

OPEN ACCESS

[The influence of repetitively pulsed plasma immersion low energy ion implantation on TiN coating formation and properties](#)

D O Sivin, P S Ananin, S V Dektyarev, A I Ryabchikov and A E Shevelev.....574

012104

OPEN ACCESS

[TiC-based coatings deposition using electric discharged plasma](#)

I Rahmatullin, A Sivkov, D Gerasimov, A Ivashutenko and J Shanenkova.....580

012105

OPEN ACCESS

[Effect of different methods of preliminary surface treatment and magnetron sputtering on the adhesion of Si coatings](#)

D P Borisov, V A Slabodchikov and V M Kuznetsov.....585

012106

OPEN ACCESS

[Solid oxide fuel cell anode surface modification by magnetron sputtering of NiO/YSZ thin film](#)

A A Solovyev, A V Shipilova, I V Ionov, E A Smolyanskiy, A L Lauk, A N Kovalchuk, G E Remnev and A M Lebedynskiy.....590

012107

OPEN ACCESS

[Study of the generation of a weakly ionized medium for spraying of biocompatible coatings by two-stage pulsed plasma set](#)

P A Tsygankov, A S Skriabin, E Yu Loktionov, K Yu Kuvaev and R I Chelmodeev.....596

012108

OPEN ACCESS

[Argon trapping in the depositing metal coating](#)

L B Begrambekov, A V Grunin, Ya A Sadovskiy, N A Puntakov, N S Utkov and A M Zaharov.....601

012109

OPEN ACCESS

[Sand-blasting treatment as a way to improve the adhesion strength of hydroxyapatite coating on titanium implant](#)

I Grubova, T Priamushko, M Surmeneva, O Korneva, M Epple, O Prymak and R Surmenev.....606

012110

OPEN ACCESS

[Phase equilibrium in system Ti-Si-C-B and synthesis of MAX phase layers in vacuum under the influence of electron beam](#)

N N Smirnyagina, V M Khaltanova, D E Dasheev and A E Lapina.....613

012111

OPEN ACCESS

[Coating of a substrate with surface preliminarily treated with intensive flows of high-speed electrons and plasma using a magnetron](#)

A Ya Leyvi and A P Yalovets.....618

012112

OPEN ACCESS

[Influence of microstructure and surface topography on the electrical conductivity of Cu and Ag thin films obtained by magnetron sputtering](#)

D A Polonyankin, A I Blesman and D V Postnikov.....622

012113

OPEN ACCESS

[Influence of substrate structure on adhesion behavior of TiN and TiAl₃/TiAlN coatings deposited by vacuum arc plasma](#)

E Vardanyan, K Ramazanov, I Yagafarov, V Budilov and R Agzamov.....628

012114

OPEN ACCESS

[Investigation of influence of structure and TiAl₃/TiAlN intermetallic coatings on the corrosion behavior of martensitic steels](#)

E Vardanyan, K Ramazanov, I Yagafarov, A Khamzina and R Agzamov.....633

012115

OPEN ACCESS

[Computer simulation of metal wire explosion under high rate heating](#)

K P Zolnikov, D S Kryzhevich and A V Korchuganov.....639

012116

OPEN ACCESS

[Plasma dynamic synthesis of iron oxides in a discharge plasma jet with possibility to control final phase composition](#)

I Shanenkov, A Sivkov, A Ivashutenko and M Gukov.....644

012117

OPEN ACCESS

[Plasma dynamic synthesis of ultradispersed zinc oxide and sintering ceramics on its basis by SPS method](#)

Yu Shanenkova, A Sivkov, A Ivashutenko, I Shanenkov and K Firsov.....650

012118

OPEN ACCESS

[The peculiarities of CVD diamond coatings synthesis in abnormal glow discharge plasma using repetitively-pulsed mode](#)

S A Linnik, A V Gaydaychuk and V V Okhotnikov.....656

012119

OPEN ACCESS

[Effect of precursor mass on product phase composition in plasma dynamic synthesis of tungsten carbide](#)

K N Shatrova, A A Sivkov, I I Shanenkov and A S Saigash.....661

012120

OPEN ACCESS

[Synthesis of silicon carbide nanopowders in free flowing plasma jet with different energy levels](#)

D Nikitin, A Sivkov, I Rahmatullin and A Ivashutenko.....666

012121

OPEN ACCESS

[Plasmadynamic synthesis of Ti-B nanopowders](#)

D Nikitin, A Sivkov, D Gerasimov and A Evdokimov.....671

012122

OPEN ACCESS

[Silica nanoparticles produced by DC arc plasma from a solid raw materials](#)

P V Kosmachev, V A Vlasov and N K Skripnikova.....676

012123

OPEN ACCESS

[Plasma-chemical synthesis of carbon nanotubes and fullerenes to create frost-resistant composite building materials](#)

A P Semenov, N N Smirnyagina, B O Tsyrenov, D E Dashev and Z M Khaltarov.....681

RADIATION PHYSICS AND CHEMISTRY OF CONDENSED MATTER

012124

OPEN ACCESS

[Numerical simulation of the effect of laser radiation on matter in an external magnetic field](#)

V V Kuzenov and S V Ryzhkov.....685

012125

OPEN ACCESS

[Compositional dependence of thermal, optical and mechanical properties of oxyfluoride glass](#)

I Z Hager, H A Othman and D T Valiev.....692

012126

OPEN ACCESS

[OpenMP parallel computing of 2D TiC combustion synthesis process using an explicit finite-volume scheme](#)

A Aoufi.....699

012127

OPEN ACCESS

[Host and defect-related photoluminescence of structurally disordered \$K_3WO_3F_3\$ oxyfluoride crystals](#)

A V Kozlov and V A Pustovarov.....707

012128

OPEN ACCESS

[The critical parameters of the thermal explosion micro hot-spot model dependence on the pulse duration](#)

A V Kalenskii, A A Zvekov and E V Galkina.....713

012129

OPEN ACCESS

[The study of inorganic scintillating materials](#)

G N Dudkin, S I Kuznetsov, V N Padalko and M S Syrtanov.....721

012130

OPEN ACCESS

[Using Rouse-Fowler model to describe radiation-induced electrical conductivity of nanocomposite materials](#)

N S Dyuryagina and A P Yalovets.....726

012131

OPEN ACCESS

[The Effect of Electric Field on the Explosive Sensitivity of Silver Azide](#)

A P Rodzevich, E G Gazenaur, L V Kuzmina, V I Krashenin and N V Gazenaur.....733

012132

OPEN ACCESS

[Influence of preliminary irradiation by gamma-quanta on development of catastrophic failures during operation of IR-LEDs](#)

A V Gradoboev and A V Simonova.....739

012133

OPEN ACCESS

[Local mechanical stress relaxation of Gunn diodes irradiated by protons](#)

A V Gradoboev and E P Tesleva.....747

012134

OPEN ACCESS

[Effect of temperature on resistance of LEDs based on AlGaAs heterostructures to ⁶⁰Co gamma radiation](#)

A V Gradoboev, P V Rubanov and V V Sednev.....756

012135

OPEN ACCESS

[Luminescence of ultrafine magnesium oxide ceramics with deep traps](#)

S V Nikiforov, V S Kortov, A N Kiryakov and K A Petrovykh.....761

012136

OPEN ACCESS

[Dynamic ignition regime of condensed system by radiate heat flux](#)

V A Arkhipov, N N Zolotorev, A G Korotkikh and V T Kuznetsov.....767

012137

OPEN ACCESS

[Ignition by laser radiation and combustion of composite solid propellants with bimetal powders](#)

A G Korotkikh, V A Arkhipov, O G Glotov and N N Zolotorev.....776

012138

OPEN ACCESS

[The thermostimulated luminescence of radiation defects in KCl, KBr and KI crystals at elastic and plastic deformation](#)

K Shunkeyev, L Myasnikova, A Barmina, N Zhanturina, Sh Sagimbaeva, Z Aimaganbetova and D Sergeyev.....783

012139

OPEN ACCESS

[The deformation stimulated luminescence in KCl, KBr and KI crystals](#)

K Shunkeyev, D Sergeev, W Drozdowski, K Brylev, L Myasnikova, A Barmina, N Zhanturina, Sh Sagimbaeva and Z Aimaganbetova.....787

012140

OPEN ACCESS

[Oxide films state analysis by IR spectroscopy based on the simple oscillator approximation](#)

N V Volkov, T V Yakutkina and V V Karpova.....791

012141

OPEN ACCESS

[Study of deformation dependence on time in polyethylene terephthalate for different static loads and irradiation doses](#)

A I Kupchishin, V M Lisitsyn, M N Niyazov and N A Voronova.....795

012142

OPEN ACCESS

[Explosive radiation sources for analytical spectroscopy](#)

V I Oleshko, S V Plotnikov and A Turlybekuly.....799

012143

OPEN ACCESS

[Thermally stimulated processes in Li and Cu doped alkali fluorides irradiated with electron beams of ultra-high dose](#)

Zh K Mamytbekov, A N Tcherepanov, A I Slesarev, M M Kidibaev, Q Shi, K V Ivanovskikh, V Yu Ivanov, A A Egamberdieva and B V Shulgin.....804

012144

OPEN ACCESS

[Methods of radiation and environmental studies of build-up areas and their analysis](#)

N K Ryzhakova, K O Shilova, A A Udalov and N V Demyanenko.....809

012145

OPEN ACCESS

[Luminescent centers in nanolayers of LiF crystals with embedded silver ions](#)

O I Shipilova, V P Dresvyansky, E F Martynovich, A L Rakevich, R Yu Shendrik, V L Paperny and A A Chernich.....815

012146

OPEN ACCESS

[The effect of aluminum particles dispersity on characteristics of ammonium perchlorate—aluminum composition laser ignition](#)

V V Medvedev, E V Forat, V P Tsipilev and A N Yakovlev.....819

012147

OPEN ACCESS

[PiC code KARAT simulations of Coherent THz Smith-Purcell Radiation from diffraction gratings of various profiles](#)

K P Artyomov, V V Ryzhov, A P Potylitsyn and L G Sukhikh.....826

012148

OPEN ACCESS

[Discharge-mechanical method of rock breakage](#)

V F Vazhov, S Y Datskevich, M Y Zhurkov, V M Muratov and B Jeffryes.....831

012149

OPEN ACCESS

[High-temperature thermoluminescence of anion-deficient corundum and its connection with intrinsic defects and impurities](#)

R N Abashev, A I Surdo and I I Milman.....836

012150

OPEN ACCESS

[Luminescence of potassium sulphate crystals activated by Sn²⁺ ions](#)

T Koketai, A Tussupbekova, A Baltabekov and E Mussenova.....842

012151

OPEN ACCESS

[Trace-transform invariants of tracks of high-velocity jets from the surface of tungsten droplets in the plasma flow](#)

P Gulyaev, V Jordan, I Gulyaev and A Dolmatov.....846

012152

OPEN ACCESS

[Proton-irradiation technology for high-frequency high-current silicon welding diode manufacturing](#)

P B Lagov, A S Drenin and M A Zinoviev.....853

012153

OPEN ACCESS

[Abnormal photothermal effect of laser radiation on highly defect oxide bronze nanoparticles under the sub-threshold excitation of absorption](#)

P Gulyaev, M Kotvanova and A Omelchenko.....857

012154

OPEN ACCESS

[UV excilamp inactivation of helminth eggs in wastewater](#)

E I Lipatov, E A Sosnin, S M Avdeev and V F Tarasenko.....866

012155

OPEN ACCESS

[About laser heat absorbing impurities in the transparency matrix of pentaerythritol tetranitrate](#)

G Murastov, V Tsipilev, V Ovchinnikov and A Yakovlev.....870

012156

OPEN ACCESS

[Luminescence of LiF crystals doped with uranium](#)

L A Lisitsyna, G S Denisov, A K Dauletbekova, Zh T Karipbayev, A A Markhabaeva, V A Vaganov, V M Lisitsyn and A T Akilbekov.....877

012157

OPEN ACCESS

[Research of a possibility of receiving sorbents for a sewage disposal from a wastage of coal preparation factory](#)

S L Buyantuev, A S Kondratenko, S Y Shishulkin, Y Y Stebenkova and A B Khmelev.....884

012158

OPEN ACCESS

[Self-trapped exciton configurations in Beryllium Oxide](#)

M A Botov, A Yu Kuznetsov and A B Sobolev.....890

012159

OPEN ACCESS

[The portable detector of nitro-explosives in vapor phase with new sensing elements on a base of pyrimidine scaffold](#)

A A Baranova, K O Khokhlov, R D Chuvashov, E V Verbitskiy, E M Cheprakova, G L Rusinov and V N Charushin.....897

012160

OPEN ACCESS

[Complex study on photoluminescence properties of YAG:Ce,Gd phosphors](#)

V M Lisitsyn, Yangyang Ju, S A Stepanov and N M Soschin.....903

012161

OPEN ACCESS

[Dispersion characteristic of photoluminescence decay times of phosphor YAG: Ce, Gd](#)

V M Lisitsyn, Yangyang Ju, S A Stepanov and N M Soschin.....909