

III International Scientific- Practical Conference "Graphene and Related Structures: Synthesis, Production, and Application" (GRS-2019)

IOP Conference Series: Materials Science and Engineering
Volume 693

Tambov, Russia
13 - 15 November 2019

Editors:

Anna Godymchuk
Jesus Iniesta Valcarcel

Evgeny Galiunin
Anna Zykova

ISBN: 978-1-7138-0985-2
ISSN: 1757-8981

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.

This work is licensed under a Creative Commons Attribution 3.0 International Licence.
Licence details: <http://creativecommons.org/licenses/by/3.0/>.

No changes have been made to the content of these proceedings. There may be changes to pagination and minor adjustments for aesthetics.

Printed with permission by Curran Associates, Inc. (2020)

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

| | |
|--|-----|
| AN EXPERIMENTAL STUDY ON THE INFLUENCE OF FUNCTIONALIZED CARBON NANOTUBES CNT TAUNIT SERIES ON THE THERMAL CONDUCTIVITY ENHANCEMENT | 1 |
| <i>A J Ali, E N Tugolukov</i> | |
| THERMAL BEHAVIOR OF CHITOSAN AS A CARBON MATERIAL PRECURSOR UNDER IR RADIATION | 8 |
| <i>A Vasilev, M Efimov, G Bondarenko, V Kozlov, E Dzidziguri, G Karpacheva</i> | |
| ELECTROCHEMICAL SYNTHESIS OF MULTILAYER GRAPHENE OXIDE AND ITS APPLICATION IN COMPOSITE MATERIALS | 17 |
| <i>A Yakovlev, E Yakovleva, V Tseluikin, V Krasnov, A Mostovoy</i> | |
| METHOD OF MODELING THE HEAT EXCHANGE PROCESS IN THE SYNTHESIS OF CARBON NANOSTRUCTURES IN ARC DISCHARGE PLASMA | 26 |
| <i>G V Abramov, I A Avcinov, A N Gavrilov, N V Sukhanova</i> | |
| ELECTRODEPOSITION OF MWCNTS/SILVER COMPOSITE COATINGS WITH ENHANCED MECHANICAL CHARACTERISTIC | 33 |
| <i>Y Litovka, I Dyakov, R Stolyarov, V Kulakov, A Zhigachev, V Korenkov</i> | |
| METHOD OF MANUFACTURING OF COMPOSITE FOR 3D PRINTING AND THE ELECTROPHYSICAL PROPERTIES OF THE OBTAINED MATERIAL | 41 |
| <i>K Dorozhkin, A Tkachev, G Kuleshov, A Badin, E Galunin, T Shematilo, V Suslyayev</i> | |
| CALCULATION OF PARAMETERS OF THE ROTARY APPARATUS FOR THE PRODUCTION OF GRAPHENE CONCENTRATE BASED ON SYNTHETIC OILS | 48 |
| <i>V F Pershin, A G Tkachev, R A Al-Jarah, T V Pasko, A A Osipov</i> | |
| A NANOSTRUCTURING APPROACH FOR MODIFICATION OF THE FEATURES OF OPTICAL MATERIALS: LITHIUM FLUORIDE | 56 |
| <i>N Kamanina, P Kuzhakov, A Kukharchik, D Kvashnin</i> | |
| EVALUATION OF THE EFFICIENCY OF LIGHTWEIGHT CONCRETE MODIFIED WITH ADDITIVES BASED ON NANOSTRUCTURES | 63 |
| <i>R J Sldozian, Z Mikhaleva, A Tkachev</i> | |
| FUZZY LOGICAL-LINGUISTIC MODEL FOR ASSESSING THE QUALITATIVE COMPOSITION OF CARBON NANOMATERIALS | 72 |
| <i>A Popov, D Polyakov</i> | |
| POLYMER COMPOSITES BASED ON FUNCTIONALIZED CARBON NANOTUBES | 80 |
| <i>T P Dyachkova, D V Tarov, E A Burakova, E N Tugolukov, A N Blokhin, E V Galunin, L V Rosenblum, D E Kobzev</i> | |
| IMPROVED MICROHARDNESS OF CHROME GALVANIC COATINGS WITH COMBINING NANODIAMONDS AND NANOTUBES | 87 |
| <i>Yu Litovka, M Nasraoui, V Dolmatov</i> | |
| CONDUCTIVITY OF A CARBON NANOTUBES-EPOXY RESIN NANOCOMPOSITE | 94 |
| <i>A Blokhin, I Zaytsev, A Sukhorukov, R Stolyarov, A Popov, I Burmistrov, D Kobzev, V Yagubov</i> | |
| PHYSICAL-CHEMICAL PROPERTIES AND CATALYTIC ACTIVITY OF THE NI-CO-CB MATERIAL | 99 |
| <i>O Andrienko, N Kobotaeva, T Skorokhodova, E Marakina, V Sachkov</i> | |
| CARBON NANOFILLERS USED IN EPOXY POLYMERIC COMPOSITES: A BRIEF REVIEW | 106 |
| <i>A Blokhin, A Sukhorukov, R Stolyarov, I Zaytsev, N Yashchishin, V Yagubov</i> | |
| THE HEAT TREATMENT DURATION EFFECT ON THE EFFICIENCY OF A CATALYST FOR CARBON NANOTUBES SYNTHESIS | 112 |
| <i>E Burakova, G Besperstova, A Tkachev, T Dyachkova, E Tugolukov, I Gutnik, N Orlova</i> | |
| TEM STUDIES OF CONICAL SCROLL CARBON NANOTUBES FORMED BY AEROSOL SYNTHESIS | 120 |
| <i>B Kulnitskiy, A Karaeva, V Mordkovich, S Urvanov, A Bredikhina</i> | |
| FLAT ELECTRIC HEATERS WITH THE EFFECT OF SELF-REGULATION BASED ON NANOMODIFIED POLYMER COMPOSITE | 127 |
| <i>V Yagubov, Alexander Shchegolkov, Alexey Shchegolkov, A Tkachev, A Sukhorukov</i> | |
| STRUCTURE AND ELECTRICAL CONDUCTIVITY OF HEAT TREATED IODINE-DOPED MULTI-WALLED CARBON NANOTUBES | 133 |
| <i>R Stolyarov, A Blohin, N Gorshkov, A Tkachev, B Kulnitskiy, T Pasko, A Sukhorukov, I Burmistrov</i> | |

| | |
|---|-----|
| THE METHOD AND THE DEVICE FOR MEASURING THERMOPHYSICAL PROPERTIES OF LIQUIDS | 139 |
| <i>A Divin, S Ponomarev, M Petrasheva, D Lyubimova, G Mozgova, P Belyaev, G Shishkina</i> | |
| IMPEDANCE SPECTROSCOPY OF ELECTROCHROMIC FILMS OF NANOCRYSTALLINE TUNGSTEN (VI) OXIDE | 149 |
| <i>A V Shchegolkov, E N Tugolukov, A V Shchegolkov, V S Yagubov</i> | |
| TWINNING FORMATION IN NANODIAMONDS AFTER TREATMENT IN A PLANETARY MILL: HRTEM STUDIES | 155 |
| <i>T Gordeeva, B Kulnitskiy, D Ovsyannikov, M Popov, V Blank</i> | |
| PRODUCTION OF FEW-LAYER AND MULTILAYER GRAPHENE BY SHEARING EXFOLIATION OF GRAPHITE IN LIQUIDS | 162 |
| <i>V F Pershin, M N Krasnyanskiy, Z A A Alhilo, A M R Al-Mashhadani, A A Baranov, A A Osipov</i> | |
| NITRATION AND OXIDATION OF GRAPHITE BY MECHANOCHEMICAL TREATMENT | 168 |
| <i>V Chaika, V Savin, L Savina, I Zhrebtsov</i> | |
| ANALYSIS OF THE STRUCTURAL CHARACTERISTICS OF GRAPHENE MATERIALS OBTAINED BY ELECTROCHEMICAL EXFOLIATION OF GRAPHITE | 175 |
| <i>Yu A Khan, T P Dyachkova, E A Burakova, E S Bakunin, A V Rukhov, N V Orlova, E Yu Obraztsova</i> | |
| POLYANILINE/MESOPOROUS CARBON COMPOSITES AS PROMISING MATERIALS FOR SUPERCAPACITORS | 183 |
| <i>I V Gutnik, T P Dyachkova, E A Burakova, I A Gavrilov</i> | |
| MICROSTRUCTURE OF 1,4-DIETHYNYLBENZENE FRONTAL POLYMERIZATION PRODUCTS | 189 |
| <i>N N Volkova, A F Zholudev, M B Kislov, E V Suslova, L S Yanovskiy</i> | |
| DEVELOPMENT OF THERMO-ELECTROCHEMICAL CELLS BASED ON FLEXIBLE NANOCOMPOSITE ELECTRODES WITH OXIDIZED MULTI-WALLED CARBON NANOTUBES COATING | 195 |
| <i>V Shpekina, I Burmistrov, N Gorshkov, D Artyukhov, N Kiselev, N Kovyneva, Y Smirnova</i> | |
| REMOVAL OF CU²⁺, ZN²⁺ AND PB²⁺ IONS USING A GRAPHENE-CONTAINING NANOCOMPOSITE: A KINETIC STUDY | 201 |
| <i>A Babkin, I Burakova, A Burakov, D Kurnosov, E Galunin, A Tkachev, I Ali</i> | |
| INVESTIGATION OF THE PROPERTIES OF TWO-DIMENSIONAL MOLYBDENUM DISULFIDE FILMS SYNTHESIZED BY THE CVD METHOD | 211 |
| <i>S Smagulova, A Semenova, E Zakharkina, P Vinokurov</i> | |
| INVESTIGATION OF THE PROPERTIES OF CARBON QUANTUM DOTS SYNTHESIZED BY THE HYDROTHERMAL METHOD | 217 |
| <i>S Smagulova, M Egorova, A Tomskaya</i> | |
| PLASMA-CHEMICAL SYNTHESIS OF CARBON NANOTUBES AND GRAPHENE WITH MESOPOROUS ARCHITECTURE FOR ENERGY APPLICATIONS | 225 |
| <i>M Shavelkina, E Shkolnikov, S Kochanova, E Sidorova</i> | |
| FIREPROOF INTUMESCENT SYSTEMS MODIFICATION BY MEANS OF PHOSPHORUS-CONTAINING METAL/CARBON NANOCOMPOSITES FOR CONSTRUCTION APPLICATIONS | 231 |
| <i>R. Mustakimov, V. Kodolov, V. Kodolova-Chukhontseva</i> | |
| RHEOLOGICAL PROPERTIES OF "VASELINE – CARBON NANOPARTICLES" MODEL SYSTEMS UNDER CONDITIONS OF NON-DESTRUCTIVE DEFORMATIONS | 240 |
| <i>M Shilov, A Smirnova, A Gvozdev, N Rozhkova, T Dyachkova, A Burkov, D Stolbov, S Savilov, N Usol'tseva</i> | |
| PRODUCTION OF GRAPHENE CONCENTRATES BASED ON SYNTHETIC OILS IN ROD DRUM MILLS | 248 |
| <i>V F Pershin, G B Zhmagaliyeva, A G Tkachev, A A Pasko, A M Vorobyev</i> | |
| SYNTHESIS AND CHARACTERIZATION OF POLYETHYLENE TEREPHTHALATE-REDUCED GRAPHENE OXIDE COMPOSITES | 256 |
| <i>P A Mikhaylov, M I Vinogradov, I S Levin, G A Shandryuk, A V Lubchenko, V G Kulichikhin</i> | |
| EFFECTS OF GRAPHENE OXIDE ON WHITE POPLAR X ASPEN (POPULUS ALBA X POPULUS TREMULA) HYBRID MICROSPROUTS AT VARIOUS GROWTH STAGES | 264 |
| <i>O Zakharova, E Kolesnikova, D S Muratov, I Il'inikh, E Tsukanova, N Yevtushenko, N Strekalova, A Gusev</i> | |
| INFLUENCE OF GO-AG AND GO-CUO COMPOSITES ON MICROPROPAGATED SHOOTS DURING ADAPTATION TO GREENHOUSE ENVIRONMENT | 275 |
| <i>O Zakharova, E Kolesnikova, E Kolesnikov, P Baranchikov, N Strekalova, A Gusev</i> | |
| KINETIC STUDIES ON TOLUENE REMOVAL FROM AQUEOUS SOLUTIONS USING CARBON NANOTUBES | 286 |
| <i>A Kucherova, I Shubin, A Yermakov, A Gerasimova, N Memetov, A Popova</i> | |

| | |
|---|------------|
| FEATURES OF OPTIMIZATION SYNTHESIS OF EQUIPMENT FOR FEEDING NANODISPERSED MATERIALS | 295 |
| <i>A Popova, I Shubin, A Kucherova, N Memetov, D Tarov</i> | |
| KINETIC OF THE DYES ADSORPTION ON A POLYHYDROQUINONE/GRAPHENE NANOCOMPOSITE UNDER DYNAMIC CONDITIONS | 304 |
| <i>E Mkrtychyan, E Neskoromnaya, I Burakova, D Kurnosov, A Burakov, A Tkachev, I Ali</i> | |
| STUDYING THE FIRE HAZARD PROPERTIES OF MULTI-WALLED CARBON NANOTUBES BY THE METHOD OF SYNCHRONOUS THERMAL ANALYSIS..... | 313 |
| <i>V Dan, N Barbin, O Bezzaponnaya, D Terentiev, S Alexeev</i> | |
| IMPACT OF PLASMA TREATMENT IN CH₄/N₂ ON THE PROPERTIES OF REDUCED GRAPHENE OXIDE..... | 319 |
| <i>E P Neustroev, A R Prokopiev, V B Timofeev, V I Popov, I I Kurkina, Z Y Davydova, A A Alekseev, S O Semenov</i> | |
| ELECTROMAGNETIC CHARACTERISTICS OF COATINGS BASED ON GRAPHENE OXIDE- AND MULTI-WALLED CARBON NANOTUBES TAUNIT-M IN A WIDE RANGE OF FREQUENCIES | 328 |
| <i>V Suslyayev, A Tkachev, E Korovin, R Stolyarov, K Dorozhkin, N Chapaksov, T Dyachkova, A Blokhin, A Korshunov</i> | |
| ADSORPTION OF CU²⁺, ZN²⁺ AND PB²⁺ IONS ON A NOVEL GRAPHENE-CONTAINING NANOCOMPOSITE: AN ISOTHERM STUDY | 335 |
| <i>A Babkin, I Burakova, A Burakov, D Kurnosov, E Galunin, A Tkachev, I Ali</i> | |
| THE USE OF CONCRETE AND EPOXY RESIN, MODIFIED WITH FEW-LAYER GRAPHENE FOR THE PRODUCTION, REPAIRS, AND STRENGTHENING OF CONCRETE BEAMS..... | 345 |
| <i>V Pershin, K A Al-Shiblawi, A M R Al-Mashhadani, A Pasko, D Melekhin</i> | |
| Author Index | |