



2018  
**NANOCON**<sup>®</sup>

## **CONFERENCE PROCEEDINGS**

Peer Reviewed

**10<sup>th</sup> Anniversary International Conference  
on Nanomaterials - Research & Application**

October 17<sup>th</sup> - 19<sup>th</sup> 2018

Hotel Voronez I, Brno, Czech Republic, EU



**NANOCON**



**TANGER Ltd.**

The Czech Society for New Materials and Technologies  
Regional Centre of Advanced Technologies and Materials



10<sup>th</sup> Anniversary International Conference on Nanomaterials - Research & Application

## **CONFERENCE PROCEEDINGS**

Peer Reviewed

**October 17<sup>th</sup> - 19<sup>th</sup> 2018**

Hotel Voronez I, Brno, Czech Republic, EU

© 2019 TANGER Ltd., Ostrava

ISBN 978-80-87294-89-5

**NANOCON 2018**      **Conference Proceedings**, Peer Reviewed

Different Authors

October 17<sup>th</sup> - 19<sup>th</sup> 2018      Hotel Voronez I, Brno, Czech Republic, EU

Issued by:                      TANGER Ltd., Keltickova 62, 710 00 Ostrava, Czech Republic, EU

Edition:                         1<sup>st</sup> Edition, 2018

Number of pages:              741

**SESSION A - NANOMATERIALS FOR ELECTRONIC, MAGNETIC AND OPTIC APPLICATIONS.**

<b>CARBON NANOSTRUCTURES, QUANTUM DOTS .....</b>	<b>13</b>
SELF-ORGANIZED AGGREGATION OF A TRIPLE OF COLLOIDAL QUANTUM DOTS INTO STABLE STRUCTURES WITH VARIOUS SHAPES CONTROLLED BY A LASER FIELD .....	14
Victoria S. KORNIENKO, Aleksei S. TSIPOTAN, Aleksandr S. ALEKSANDROVSKY, Vitaliy V. SLABKO	
THE EFFECT OF ZIRCONIA NANOPOWDERS' STRUCTURE MODIFICATION BY GEO <sub>2</sub> ADDITION ON THE KINETICS OF THE INITIAL SINTERING STAGE .....	18
Marharyta LAKUSTA, Igor DANILENKO, Galina VOLKOVA, Larisa LOLADZE, Tetyana KONSTANTINOVA	
OPTICAL PROPERTIES OF PBS-GO AND PBS-RGO SYSTEM FOR SOLAR CELLS FABRICATION .....	24
Anton BABAEV, Aliaksei DUBAVIK, Sergei CHEREVKOV, Peter PARFENOV, Elena USHAKOVA, Mikhail BARANOV, Igor NABIEV, Alexandr BARANOV, Aleksandr LITVIN	
MOVPE GAN/ALGAN HEMT NANO-STRUCTURES .....	30
Eduard HULICIUS, Karla KULDOVÁ, Alice HOSPODKOVÁ, Jiří PANGRÁC, Filip DOMINEC, Josef HUMLÍČEK, Ivan PELANT, Ondřej CIBULKA, Kateřina HERYNKOVÁ	
RESONANT Z-SCAN MEASUREMENT OF NON-LINEAR PROPERTIES OF COLLOIDAL LEAD SULFIDE QUANTUM DOTS .....	36
Ivan SKURLOV, Evgenia PONOMAREVA, Sergey PUTILIN, Aleksei POPOV, Aliaksei DUBAVIK, Anton TSYPKIN, Aleksandr LITVIN	
MODEL OF CARRIER MULTIPLICATION DUE TO IMPURITY IMPACT IONIZATION IN BORON-DOPED DIAMOND .....	41
Vincent MORTET, Nicolas LAMBERT, Pavel HUBÍK, Ali SOLTANI	
PROPERTIES OF PRESSURELESS SINTERED SILICON NITRIDE .....	46
Olga LUKIANOVA, Dmitrii KOLESNIKOV, Vladimir KRASILNIKOV, Alexander KHMARA, Sergey PEREVISLOV	
MOLECULAR DYNAMICS SIMULATIONS OF INTERACTION OF VOLATILE ORGANIC COMPOUNDS WITH GRAPHENE SURFACE.....	51
Michal LANGER, Martin PYKAL, Michal OTYEPKA	
THE METHOD OF CARBON NANOTUBES ADDITION IN TO AL - CU DISSIMILAR FRICTION STIR WELDED JOINT .....	57
Oleg PANCHENKO, Ke CHEN, Pedro VILACA, Fedor ISUPOV, Aleksey SHAMSHURIN	
GRAPHENE NANOSHEETS SYNTHESIZED IN MICROWAVE PLASMA AND LIQUID EXFOLIATED GRAPHENE: STRUCTURAL CHARACTERIZATION STUDY.....	63
Jana JURMANOVÁ, Ondřej JAŠEK, Jozef TOMAN, Miroslav Šnírer, Vít KUDRLE	
GOLD NANOPARTICLES-CYSTEINE-MULTIWALL CARBON NANOTUBE MODIFIED ELECTRODE FOR HEAVY METAL IONS DETECTION.....	69
Zuzana KOUDELKOVA, Lukas RICHTERA, Pavel SVEC, Vojtech ADAM	
PLASMON-EXCITON COUPLING IN A HYBRID FILMS OF METALLIC NANOPARTICLES AND J-AGGREGATES OF CYANINE DYES .....	73
Rezida NABIULLINA, Anton STAROVOYTOV, Igor GLADSKIKH	

THE PHOTOLUMINESCENCE AND OPTICAL ABSORPTANCE OF PLASMA HYDROGENATED NANOCRYSTALLINE ZnO THIN FILMS .....	78
Zdenek REMES, Yu Ying CHANG, Jiri STUCHLIK, Julia MICOVA	
RELATION BETWEEN OPTICAL AND MICROSCOPIC PROPERTIES OF HYDROGENATED SILICON THIN FILMS WITH INTEGRATED GERMANIUM AND TIN NANOPARTICLES .....	83
Jiri STUCHLIK, The Ha STUCHLIKOVA, Jan CERMAK, Jaroslav KUPCIK, Radek FAJGAR, Zdenek REMES	
EFFECT OF EU DOPING ON THE OPTICAL PROPERTIES OF ZnO NANORODS PREPARED BY CHEMICAL BATH DEPOSITION .....	88
Roman YATSKIV, Nikola BAŠINOVÁ, Jan GRYM, Jan VANIŠ	
STOICHIOMETRY ISSUE OF IRON(III) OXIDE NANOMATERIALS BY MÖSSBAUER SPECTROSCOPY .....	93
Jana HAVLÁKOVÁ, Jiří TUČEK, Radek ZBOŘIL	
COMPUTER SIMULATION OF ELECTRONIC DEVICE FOR GENERATION OF ELECTRIC OSCILLATIONS BY NEGATIVE DIFFERENTIAL CONDUCTIVITY OF SUPERCOOLED NANOSTRUCTURED SUPERCONDUCTORS IN ELECTRIC FIELD .....	100
Todor MISHONOV, Victor DANCHEV, Albert VARONOV	
<b>SESSION B - INDUSTRIAL AND ENVIRONMENTAL APPLICATIONS OF NANOMATERIALS.....</b>	<b>106</b>
GRAPHENE EMBEDDED BITUMINOUS ROADS: A NEW LOOK INTO THE DESIGN OF COMPLEX NANOCOMPOSITES .....	107
Govindan INDUCHOODAN, Bijan ADL-ZARRABI, Jan SWENSON, Luping TANG	
POSSIBILITIES OF REMOVING THE CRUST FROM THE SURFACE OF HISTORIC STONE WITH NANOPARTICLES I TiO <sub>2</sub> .....	113
Klára KROFTOVÁ, David ŠKODA, Ivo KUŘITKA.....	
NANOCELLULOSE AS POTENTIAL FILLER MATERIAL, PROTECTIVE SHELL AND ADHESION PROMOTER OF MICROBIAL AGROFORMULATIONS .....	119
Claudia PREININGER, Ursula SAUER, Sara DOPPLER, Einav KULBAK, Sems YONSEL, Carmen Michaela POPESCU, Cristina POPESCU	
CYCLIC PHOTOCATALYTIC REGENERATION OF SORBENT, BASED ON CARBON NITRIDE (G-C <sub>3</sub> N <sub>4</sub> ) INCORPORATED IN SILICA NET STRUCTURE .....	125
Pavel MANČÍK, Jiří BEDNÁŘ, Ladislav SVOBODA, Richard DVORSKÝ	
DESIGN OF EXPERIMENT METHOD FOR OPTIMIZATION OF SYNTHESIS OF G-C <sub>3</sub> N <sub>4</sub> PHOTOCATALYST.....	131
Jiří ZELINKA, Petra HALFAROVÁ, David VYKYDAL, Vojtěch LIŠKA, Petr PRAUS, Vlastimil MATĚJKA	
ELECTROCHEMICAL ANODIZATION METHOD TOWRDS MULTI-LEG TiO <sub>2</sub> NANOTUBES FOR PEC APPLICATIONS.....	137
Mahdi SHAHREZAEI, Rambabu YALAVARTHI, Alberto NALDONI, Stepan KMENT, Patrik SCHMUKI, Radek Zboril	
INACTIVATION OF <i>ASPERGILLUS NIGER</i> ON PAINTS CONTAINING ZnO.....	142
Zuzana RÁCOVÁ, Michal BAUDYS, Josef KRÝSA, Petra TICHÁ, Pavel DEMO	
SIMPLE ONE-POT HYDROTHERMAL SYNTHESIS AND PHOTOCATALYTIC ACTIVITY OF ZnS AND ZnS/KAOLINITE NANOCOMPOSITE .....	146
Kateřina MAMULOVÁ KUTLÁKOVÁ, Jonáš TOKARSKÝ	
PREPARATION AND CHARACTERIZATION OF PHOTOCATALYTICALLY ACTIVE BISMUTH IODATE.....	152
Vlastimil MATĚJKA, Petr MARŠOLEK, Alexandr MARTAUS, Lucie GEMBALOVÁ, Petr PRAUS	

ELECTRICAL AND ANTIBACTERIAL PROPERTIES OF POLYESTER NONWOVEN WITH CONDUCTIVE NANOMETALLIC SURFACE PREPARED USING TANNIC ACID .....	158
Hana KŘÍŽOVÁ, Jakub WIENER	
STUDY OF PHOTOVOLTAGE STABILITY ON NANODIAMOND-POLYPYRROLE COMPOSITES BY KELVIN PROBE METHOD .....	164
Yen-Chen CHANG, Daria MILIAIEVA, Bohuslav REZEK	
ATOMIC LAYER DEPOSITION OF LITHIUM OXIDE, TIN OXIDE, AND LITHIATED TIN OXIDE NANOFILMS FOR HIGH PERFORMANCE THIN FILM BATTERIES ANODES.....	169
Maxim MAXIMOV, Denis NAZAROV, Ilya MITROFANOV, Yury KOSHTYAL, Aleksander RYMYANTSEV, Anatoly POPOVICH	
OPEN TOP AND SELF-ORGANIZED LONG TITANIUM DIOXIDE NANO TUBES PREPARED BY ANODIZATION OF SPUTTERED TITANIUM LAYER .....	175
S.M. Hossein HEJAZI, Tapan BARMAN, Alberto NALDONI, Zdeněk HUBIČKA, Štěpán KMENT, Patrik SCHMUKI, Radek ZBOŘIL	
ELECTRICAL CONDUCTIVE AND GAS SENSITIVE TRANSPARENT TIN OXIDE THIN FILMS PREPARED BY ATMOSPHERIC PRESSURE PECVD .....	181
Sven GERULLIS, Oliver BEIER, Andreas PFUCH, Marc RAUGUST, Sten Mark KRETZSCHMAR, Bernd GRUENLER	
SURFACE MODIFICATION OF POLYMERS TO IMPART ANTISTATIC PROPERTIES .....	187
Alexandra ISAKOVA, Vladimir TVERSKOY, Andrey INDENBOM, Victor IVANOV, Oxana GRIBKOVA, Aleksandr NEKRASOV	
ADHESION IMPROVEMENT BETWEEN BITUMEN AND MINERAL AGGREGATE: THEORETICAL PRINCIPLES AND THEIR IMPACT ON PAVEMENT STRUCTURE LIFETIME.....	192
Jan TREJBAL, Pavel DEMO, Václav NEŽERKA, Alexey SVESHNIKOV, Tereza VALENTOVÁ, Jan VALENTIN	
COMPARISON OF MAGNETICALLY MODIFIED MONTMORILLONITE AND SMECTA AS HEAVY METALS SORBENTS .....	198
Michaela TOKARČÍKOVÁ, Jana SEIDLEROVÁ, Oldřich MOTYKA	
MICROSCOPIC PERFORMANCE OF CEMENTITIOUS COMPOSITE WITH RECYCLED CONCRETE ADMIXTURE.....	204
Vladimír HRBEK, Zdeněk PROŠEK, Václav NEŽERKA, Pavel TESÁREK	
ISOLATION OF ARGININE USING MAGHEMITE PARTICLES .....	210
Natalia CERNEI, Pavel KOPEL, Pavel HORKY, Ondřej ZITKA, Vojtech ADAM	
STUDY OF ANTIMONY REMOVAL EFFICIENCY USING FERRATE (VI) .....	214
Robert PRUCEK, Martin SOLÁR, Aleš PANÁČEK, Jiří TUČEK, Jan FILIP, Radek ZBOŘIL	
ENHANCEMENT OF ELECTRICAL CONDUCTIVITY AND STABILITY OF POLYPYRROLE BY INTERCALATION INTO MONTMORILLONITE .....	220
Jonáš TOKARSKÝ, Pavlína PEIKERTOVÁ, Kateřina MAMULOVÁ KUTLÁKOVÁ, Lenka KULHÁNKOVÁ	
GERMANIUM AND TIN NANOPARTICLES ENCAPSULATED IN AMORPHOUS SILICON MATRIX FOR OPTOELECTRONIC APPLICATIONS.....	226
The Ha STUCHLIKOVA, Zdenek REMES, Jiri STUCHLIK	
ANALYSIS OF ELECTRIC FIELD DEPENDING ON THE DIAMETER OF THE BALL ELECTRODE .....	230
Ondřej BAŤKA, Jaroslav BERAN, Josef SKŘIVÁNEK	

MÖSSBAUER STUDY OF REACTION MECHANISMS OF FERRATES (Fe <sup>VI</sup> , Fe <sup>V</sup> , AND Fe <sup>IV</sup> ): DETERMINATION OF EFFICIENCY IN WATER DECONTAMINATION .....	235
Michaela TOMÍČKOVÁ, Radek ZBOŘIL, Jiří TUČEK	
STRUCTURAL AND MAGNETIC PROPERTIES OF NANOMATERIALS PREPARED BY MODIFICATION OF IRON NANOPARTICLES AND THEIR EFFICIENCY IN CR(VI) REMOVAL: A COMPARATIVE STUDY .....	243
Josef KAŠLÍK, Ivo MEDŘÍK, Jan FILIP, Eleni PETALA, Ondřej MALINA, Radek ZBOŘIL	
PREPARATION AND CHARACTERIZATION OF FIBROUS NON-WOVEN TEXTILE DECORATED BY SILVER NANOPARTICLES FOR WATER FILTRATION .....	249
Petra PEER, Martina POLÁŠKOVÁ, Jaroslav MOSNÁČEK, Jana SEDLAŘIKOVÁ, Milan MASAŘ	
ELECTROSPUN NANOFIBRES FOR SOLID-PHASE MICROEXTRACTION .....	254
Vojtěch ANTOŠ, Pavel HRABÁK, Klára LÍSKOVÁ	
SURFACE MODIFICATION OF ZERO-VALENT IRON NANOPARTICLES BY BIOLOGICAL ACTIVE SUBSTANCE - COMPLEX TESTS .....	260
Kristýna PEŠKOVÁ, Kristýna MARKOVÁ, Ondřejka VOLOŠČUKOVÁ, Jaroslav NOSEK	
A COMPARATIVE ASSESSMENT OF AU NANOPARTICLES SYNTHESIZED VIA GREENER PATHWAYS USING NATURAL HYDROCOLLOIDS .....	266
Mayza IBRAHIM, Vinod V.T. PADIL, Miroslav ČERNÍK	
FLEXIBLE AMMONIA GAS SENSOR BASED ON POLYANILINE .....	272
Alexandr POŠTA, Josef NÁHLÍK, Alexandr LAPOSA, Jan VOVES	
INFLUENCE OF NANOPARTICLES ON MICROALGAE DETECTED BY IN VIVO IMAGING .....	277
Kristyna PAVELICOVA, Aneta STREJCKOVA, Ivan RANKIC, Tereza VANECKOVA, Jaroslava ZELNICKOVA, Dalibor HUSKA, Marketa VACULOVICOVA	
DETECTION OF UV RADIATION IN VINEYARDS BY OPTICAL ANALYSIS OF CDTE QUANTUM DOTS .....	282
Lenka SOCHOROVÁ, Božena HOSNEDLOVÁ, Michaela DOČEKALOVÁ, Martina STAŇKOVÁ, Dagmar UHLÍŘOVÁ, Branislav RUTTKAY-NEDECKÝ, Marta KEPINSKA, Halina MILNEROWICZ, <sup>1</sup> Mojmír BAROŇ, Hai Xuan NGUYEN, Bach Ngoc DUONG, Hoai Viet NGUYEN, Jiří SOCHOR, Josef RŮŽIČKA, René KIZEK	
<b>SESSION C - BIONANOTECHNOLOGY, NANOMATERIALS IN MEDICINE .....</b>	<b>288</b>
PREPARATION OF COMPOSITE PERIODIC METAL-POLYMER NANOSTRUCTURES .....	289
Dominik FAJSTAVR, Markéta PIŠLOVÁ, Petr SLEPIČKA, Václav ŠVORČÍK	
POLYURETHANE MODIFIED BY PLASMA ION IMPLANTATION .....	295
V.S. CHUDINOV, I.N. SHARDAKOV, A.L. SVISTKOV, A.V. KONDYURIN	
THE EFFECT OF SIMULATED BODY FLUID ON THE GROWTH AND DIFFERENTIATION OF HUMAN MESENCHYMAL STEM CELLS CULTURED ON NANOSTRUCTURED Ti6Al4V SURFACES .....	300
Eva FILOVÁ, Barbora VOLTROVÁ, Petra JAROLÍMOVÁ, Roman MATĚJKA, Věra LUKÁŠOVÁ, Jaroslav FOJT, Luděk JOSKA, Matej DANIEL	
NATURAL HIERARCHICAL STRUCTURES AND THEIR REPLICATION .....	306
Dora KROISOVÁ	



BACTERIAL RESISTANCE TO SILVER NANOPARTICLES .....	312
Aleš PANÁČEK, Lucie HOCHVALDOVÁ, David PANÁČEK, Monika SMÉKALOVÁ, Robert PRUCEK, Aristeidis BAKANDRITSOS, Michal OTYEPKA, Radek ZBOŘIL, Libor KVÍTEK	
ON THE FEASIBILITY OF APPLICATION OF BIO-CONJUGATED MoS <sub>2</sub> BASED NANOPLATFORM FOR TARGETED CANCER TREATMENT .....	318
Anna KALOSI, Adriana ANNUSOVA, Martina LABUDOVA, Nikola BUGAROVA, Marianna ELIASOVA SOHOVA, Monika BENKOVICOVA, Michal BODIK, Matej JERGEL, Peter SIFFALOVIC, Eva MAJKOVA, Maria OMASTOVA, Silvia PASTOREKOVA	
ADHESION AND GROWTH OF ADIPOSE TISSUE-DERIVED STEM CELLS ON FIBRIN ASSEMBLIES WITH ATTACHED GROWTH FACTORS FOR TISSUE ENGINEERING OF HEART VALVES .....	324
Elena FILOVA, Martina TRAVNICKOVA, Jarmila KNITLOVA, Roman MATEJKA, Johanka KUCEROVA, Zuzana RIEDELOVÁ, Eduard BRYNDA, Lucie BACAKOVA	
RELATION BETWEEN RHEOLOGICAL, STRUCTURAL AND DISSOLUTION PROPERTIES OF COVALENTLY AND IONICALLY MODIFIED HYALURONIC ACID-BASED DRUG CARRIERS .....	330
Ádám JUHÁSZ, Norbert VARGA, Árpád TURCSÁNYI, Edit CSAPÓ	
OECT MULTIELECTRODE ARRAY FOR REAL-TIME CELL CULTURE MONITORING .....	336
Ota SALYK, Jan VÍTEČEK, Eva ŠAFAŘÍKOVÁ, Lukáš OMASTA, Stanislav STRÍTESÝ, Jiří EHLICH, Martin VALA, Martin WEITER	
CONJUGATED METALLOTHIONEIN-CARBON-DOXORUBICIN NANOTRANSPORTER FOR TARGETED BREAST CANCER THERAPY .....	342
Sylvie SKALIČKOVÁ, Marta KEPINSKA, Martin LOFFELMANN, Dagmar UHLÍŘOVÁ, Michael GARGULÁK, Michaela DOČEKALOVÁ, Božena HOSNEDLOVÁ, Branislav RUTTKAY-NEDECKÝ, Halina MILNEROWICZ, Carlos FERNANDEZ, René KIZEK	
NANODIAMONDS ENCAPSULATED IN NANOFIBERS AS A NEW STRATEGY FOR MICRORNA-BASED THERAPY OF PROSTATE CANCER .....	348
Giuseppe BITTI, Radek DIVÍN, Veronika BENSON, Eva FILOVA, Evžen AMLER	
UNIVERSAL PLATFORM FOR SERS DETECTION OF “NORMAL” AND “TUMOR” CELLS CULTIVATION MEDIA .....	354
Mariia ERZINA, Andrii TRELIN, Olga GUSELNIKOVA, Yevgeniya KALACHYOVA, Anastasia PERMINOVA, Pavel POSTNIKOV, Vaclav ŠVORČÍK, Oleksiy LYUTAKOV	
SUPERPARAMAGNETIC IRON OXIDE NANOPARTICLES (SPIONS) MODIFIED WITH SARCOSINE OXIDASE - ENZYMATIC ACTIVITY ANALYSIS BY SDS-PAGE .....	360
Dagmar UHLÍŘOVÁ, Martina STAŇKOVÁ, Michaela DOČEKALOVÁ, Božena HOSNEDLOVÁ, Marta KEPINSKA, Branislav RUTTKAY-NEDECKÝ, Josef RŮŽIČKA, Carlos FERNANDEZ, Halina MILNEROWICZ, René KIZEK	
γ-Fe <sub>2</sub> O <sub>3</sub> NANOPARTICLES AS A POTENTIAL SENSOR FOR HISTAMINE ISOLATION .....	365
Milica GAGIC, Pavel KOPEL, Natalia CERNEI, Ondrej ZITKA, Pavel SVEC, Ewelina JAMROZ, Vojtech ADAM	
THERANOSTIC TOOL FOR TARGETING OF BACTERIAL CELLS BASED ON SILVER NANOPARTICLES .....	370
Michael GARGULÁK, Matouš ČÍŽEK, Michaela DOČEKALOVÁ, Marta KEPINSKA, Andre FERREIRA DA SILVA, Aneta SUROVÍKOVÁ, Dagmar UHLÍŘOVÁ, Martina STAŇKOVÁ, Branislav RUTTKAY-NEDECKÝ, Aleš VAVŘINÍK, Jiří SOCHOR, Hoai Viet NGUYEN, René KIZEK	

CIRCULATING TUMOR DNA AS A PROMISING BIOMARKER FOR BREAST CANCER DETECTION: PCR AMPLIFICATION IMPROVED BY USING GOLD NANOPARTICLES .....	376
Andre FERREIRA DA SILVA, Dagmar UHLÍŘOVÁ, Christina KOLLIPOULOU, Anastasia SEIMENI, Marta KEPINSKA, Martin LOFFELMANN, Michael GARGULÁK, Michaela DOČEKALOVÁ, Božena HOSNEDLOVÁ, Branislav RUTTKAY-NEDECKÝ, Halina MILNEROWICZ, René KIZEK	
MICROSCOPIC STUDY OF MULTIFUNCTIONAL DRUG MOLECULE ADHESION TO ELECTRONIC BIOSENSORS COATED WITH DIAMOND AND GOLD NANOPARTICLES .....	380
Tomáš FINSTERLE, Ivana PILARČÍKOVÁ, Ilona ALI BLÁHOVÁ, Štěpán POTOCKÝ, Alexander KROMKA, Egor UKRAINTSEV, Eugenie NEPOVIMOVÁ, Kamil MUSÍLEK, Kamil KUČA, Bohuslav REZEK	
THE USE OF BIOACTIVE COMPOUNDS AND THEIR ENCAPSULATION INTO LIPOSOMES TO INCREASE THE EFFECTIVENESS AND CONTROL RELEASE .....	386
Julie HOOVÁ, Marie VYSOKÁ, Lucia DZURICKÁ, Petra MATOUŠKOVÁ, Ivana MÁROVÁ	
ANTIOXIDANT ACTIVITY OF SILVER NANOPARTICLES PREPARED BY GREEN SYNTHESIS .....	392
Branislav RUTTKAY-NEDECKÝ, Michaela DOČEKALOVÁ, Božena HOSNEDLOVÁ, Dagmar UHLÍŘOVÁ, Martina STAŇKOVÁ, Marta KEPINSKA, Halina MILNEROWICZ, Carlos FERNANDEZ, Mojmir BAROŇ, Jiří SOCHOR, Hoai Viet NGUYEN, Rene KIZEK	
DESIGNING A COMPOSITE FILMS BASED ON CARBON QUANTUM DOTS AND FURCELLARAN .....	397
Vedran MILOSAVLJEVIC, Ewelina JAMROZ, Milica GAGIC, Pavel KOPEL, Vojtech ADAM	
CONTROLLED SYNTHESIS OF GD-DOPED SUPERPARAMAGNETIC IRON OXIDE NANOPARTICLES TOWARDS STABLE AND BIOCOMPATIBLE CONTRAST AGENT .....	402
Kateřina POLÁKOVÁ, Zdeňka MEDŘÍKOVÁ, Ondřej MALINA, Klára ČÉPE, Radek ZBOŘIL	
TRANSPORT OF DYES IN POLYELECTROLYTE-SURFACTANT HYDROGELS .....	410
Martina KLUČÁKOVÁ, Sabina JARÁBKOVÁ, Miloslav PEKAŘ	
AN APPROPRIATE METHOD FOR ASSESSING HYDROGEL PORE SIZES BY CRYO-SEM .....	415
Katerina ADAMKOVA, Monika TRUDICOVA, Kamila HRUBANOVA, Petr SEDLACEK, Vladislav KRZYZANEK	
STUDY OF INTERACTION OF DYES WITH BIOPOLYMER CHITOSAN .....	421
Pavel KOLESA, Martina KLUČÁKOVÁ	
SENSITIVE SERS PLATFORM OF BIMETALLIC NANOPARTICLES IMMOBILIZED ON THE GOLD GRATING SURFACE.....	426
Yevgeniya KALACHYOVA, Vaclav SVORCIK, Oleksiy LYUTAKOV	
MAGNETIC MOLECULARLY IMPRINTED POLYMERS USED FOR STAPHYLOCOCCUS AUREUS ISOLATION AND DETECTION.....	432
Jaroslava BEZDEKOVA, Jitka HUTAROVA, Marketa VACULOVICOVA	
DETECTION OF PHYTOESTROGENS BY CAPILLARY ELECTROPHORESIS IN COMBINATION WITH ISOLATION BY MAGNETIC PARTICLES MODIFIED BY MOLECULARLY IMPRINTED POLYMER .....	437
Jaroslava ZELNICKOVA, Marcela VLCNOVSKA, Lucia ZIBEKOVA, Kristyna ZEMANKOVA, Romana BACOVA, Martina KOLACKOVA, Marketa VACULOVICOVA	
COMPARISON OF PDMS MICROTOPOGRAPHICAL PLATES AND PLANAR NANOFIBER SCAFFOLDS FOR IN VITRO CULTIVATION OF CARDIAC CELLS .....	442
Josef SKOPALIK, Jan SLAVIK, Vratislav CMIEL, Katerina POLAKOVA, Jaroslav PRUCHA, Eva GABRIELOVA, Larisa BAI AZITOVA, Ondrej SVOBODA, Ivo PROVAZNIK	

PLASMA TREATMENT IN SURFACE MODIFICATION OF SILICA DIOXIDE NANOFIBERS .....	448
Hana TOMÁNKOVÁ, Miroslava RYSOVÁ, Adam PAZOUREK	
ORGANOSILICON PLASMA POLYMERS BASED ON TRIMETHYLSILYL ACETATE MONOMER.....	454
Štěpánka KELAROVÁ, Vojtěch HOMOLA, Vilma BURŠÍKOVÁ	
PREPARATION OF ANTIBACTERIAL ELECTROSPUN SCAFFOLD FOR SKIN CELLS CULTURE .....	459
Emi GOVORCIN BAJŠIC, Matea VECERIC, Emilija ZDRAVEVA, Budimir MIJOVIC, Tamara HOLJEVAC GRGURIC, Massimo UJCIC, Mirna TOMINAC TRCIN, Igor SLIVAC	
Ag AND Pd NANOSTRUCTURES: FROM MATERIAL PROPERTIES TO BIOLOGICAL APPLICATIONS .....	465
Markéta KAIMLOVÁ, Markéta PIŠLOVÁ, Václav ŠVORČÍK, Jakub SIEGEL	
ELECTROSPINNING AND BIOCOMPATIBILITY OF POLYMER-CERAMIC NANOFIBERS FOR TISSUE ENGINEERING .....	472
Eva ŠŤASTNÁ, Klára ČÁSTKOVÁ	
THE EFFECT OF POLY-E-CAPROLACTONE NANOFIBERS WITH PLATELETS ON CELL PROLIFERATION AND VIABILITY.....	477
Věra SOVKOVÁ, Karolína VOCETKOVÁ, Evžen AMLER	
INCORPORATING ANTIBACTERIAL CLAY MINERALS INTO NANOFIBROUS LAYERS BY ELECTROSPINNING .....	483
Lenka BARDOŇOVÁ, Adéla KOTZIANOVÁ, Kateřina MAMULOVÁ KUTLÁKOVÁ, Sylva HOLEŠOVÁ, Jan KLEMEŠ	
ZINC PHOSPHATE NANOPARTICLES PREPARATION AND THEIR ANTIMICROBIAL ACTIVITY .....	489
Pavel KOPEL, Natalia CERNEI, Milica GAGIC, Pavel HORKY, Kristyna SMERKOVA, Vojtech ADAM	
THE EFFECT OF TEMPERATURE TREATMENT TiO <sub>2</sub> NANOPARTICLES ON ANTIBACTERIAL PROPERTIES.....	494
Zuzana BYTESNIKOVA, Vendula VALECKOVA, Pavel SVEC, Lukas RICHTERA, Kristyna SMERKOVA, Petr VITEK, Vojtech ADAM	
NUMERICAL MODEL OF THE MECHANICAL BEHAVIOR OF COATED MATERIALS IN THE PAIR FRICTION «HEAD - ACETABULUM CUP» OF HIP JOINT .....	499
Galina EREMINA, Alexey SMOLIN	
EFFECT OF COLD ATMOSPHERIC PRESSURE PLASMA GENERATED BY DIFFUSE COPLANAR SURFACE BARRIER DISCHARGE ON POLY(2-OXAZOLINE) THIN FILMS .....	505
Petra ŠRÁMKOVÁ, Jakub KELAR, Richard KRUMPOLEC, Zlata TUČEKOVÁ, Monika STUPAVSKÁ, Juraj KRONEK, Dušan KOVÁČIK, Mirko ČERNÁK	
<i>IN VIVO</i> ANTIBACTERIAL STUDY OF ZINC PHOSPHATE-BASED NANOPARTICLES.....	511
Silvia KOCIOVA, Vendula VALECKOVA, Zuzana BYTESNIKOVA, Pavel HORKY, Pavel KOPEL, Vojtech ADAM, Kristyna SMERKOVA	
RELEASE OF SILVER NANOPARTICLES FROM POLYSACCHARIDE FILMS BASED ON METHYLCELLULOSE .....	517
Markéta PIŠLOVÁ, Tereza JAČKOVÁ, Dominik FAJSTAVR, Kateřina KOLÁŘOVÁ, Václav ŠVORČÍK	
GREEN SYNTHESIZED SILVER NANOPARTICLES DERIVED FROM AN EXTRACT OF THE BETULA PENDULA TREE.....	523
Šárka HRADILOVÁ, Aleš PANÁČEK, Radek ZBOŘIL	

**SESSION D - MONITORING AND TOXICITY OF NANOMATERIALS ..... 530**

BIOMARKERS OF OXIDATIVE STRESS AND INFLAMMATION IN RESEARCHERS EXPOSED TO NANOPARTICLES  
BY INHALATION DURING THE HANDLING OF NANOCOMPOSITES ..... 531

Daniela PELCLOVÁ, Vladimír ŽDÍMAL, Jaroslav SCHWARZ, Martin KOMARC, Štěpánka VLČKOVÁ,  
Zdenka FENCLOVÁ, Lucie LISCHKOVÁ, Štěpánka DVOŘÁČKOVÁ, Andrea RÖSSNEROVÁ,  
Pavel RÖSSNER, Jr.

EXPOSURE TO COPPER OXIDE NANOPARTICLES: BIOLOGICAL IMPACTS..... 537  
Pavel RÖSSNER, Jr.

DNA STRAND BREAKS AND OXIDATIVE DAMAGE IN LYMPHOCYTES OF WORKERS HANDLING NANOCOMPOSITE  
MATERIALS..... 543

Božena NOVOTNÁ, Daniela PELCLOVÁ, Pavel RÖSSNER, Jr., Táňa BRZICOVÁ, Andrea RÖSSNEROVÁ,  
Lucie LISCHKOVÁ, Štěpánka DVOŘÁČKOVÁ

CYTOTOXICITY OF NANOMATERIALS APPLICABLE IN RESTORATION AND CONSERVATION ..... 548  
Táňa BRZICOVÁ, Monika REMZOVÁ, Radek ŽOUŽELKA, Jiří RATHOUSKÝ, Kristýna VRBOVÁ,  
Pavel RÖSSNER, Jan TOPINKA

MICRONUCLEI LEVELS IN NANOCOMPOSITES PRODUCTION WORKERS: INTERPRETATION OF RESULTS  
FROM TWO YEARS OF MONITORING ..... 554

Andrea RÖSSNEROVÁ, Daniela PELCLOVÁ, Vladimír ŽDÍMAL, Pavel RÖSSNER, Jr., Fatima ELZEINOVÁ,  
Kristýna VRBOVÁ, Jan TOPINKA, Jaroslav SCHWARZ, Jakub ONDRÁČEK, Martin KOŠTEJN, Martin KOMARC,  
Štěpánka VLČKOVÁ, Zdenka FENCLOVÁ, Lucie LISCHKOVÁ, Štěpánka DVOŘÁČKOVÁ

TOXICITY OF SURFACE-MODIFIED COPPER OXIDE NANOPARTICLES IN A MOUSE MACROPHAGE CELL LINE:  
INTERPLAY OF PARTICLES, SURFACE COATING AND PARTICLE DISSOLUTION..... 560

Tereza ČERVENÁ, Helena LÍBALOVÁ, Pedro M. COSTA, Magnus OLSSON, Lucian FARCAL, Simona ORTELLI,  
Magda BLOSI, Jan TOPINKA, Anna L. COSTA, Bengt FADEEL

CELLULAR UPTAKE OF GRAPHENE ACID BY HEL AND HELA CELLS STUDIED BY UV RAMAN SPECTROSCOPY ..... 566  
Anna BALZEROVÁ, Kateřina POLÁKOVÁ, Tomáš MALINA, Jan BELZA, Václav RANC, Radek ZBOŘIL

ANALYSIS OF THE WAY TO INCREASE SAFETY IN TERMS OF POSSIBLE INHALATION OF NANO  
AND MICROPARTICLES DURING GUN SHOOTING..... 572

Petra ROUPCOVA, Stanislav LICHOROBIEC, Karel KLOUDA, Lucie BEDNÁŘOVÁ,  
Lucie GEMBALOVÁ

MONTMORILLONITE STABILITY AND ITS EFFECTS ON THE ENVIRONMENT ..... 578

Klára DROBÍKOVÁ, Michaela TOKARČÍKOVÁ, Kateřina MAMULOVÁ KUTLÁKOVÁ, Oldřich MOTYKA,  
Jana SEIDLEROVÁ

PLANT RESPONSE TO NANO METAL OXIDES AND THEIR COMPOSITES: CHLOROPHYLL CONTENT AS A STRESS  
INDICATOR ..... 584

Oldřich MOTYKA, Kristína ŠTRBOVÁ, Inga ZINCOVSCAIA

**SESSION E - ADVANCED METHODS OF PREPARATION AND CHARACTERIZATION OF NANOMATERIALS . 589**

STABILIZATION OF CADMIUM SULFIDE NANOPARTICLES USING BLOCK-COPOLYMERS ..... 590

Bernhard SCHUMMER, Benedikt SOCHOR, Ivan D. POPOV, Stefan GERTH

MICROSTRUCTURE REFINEMENT IN MARTENSITIC CREEP RESISTANT STEEL VIA SEVERE PLASTIC DEFORMATION .....	597
Petr KRAL, Jiri DVORAK, Vaclav SKLENICKA, Yoichi TAKIZAWAA, Takahiro MASUDA, Zenji HORITA, Kveta KUCHAROVA, Marie KVAPILOVA, Marie SVOBODOVA	
LOW TEMPERATURE SYNTHESIS OF SILVER NANOPARTICLES .....	603
Libor KVÍTEK, Adéla BÁRTOVÁ, Robert PRUCEK, Aleš PANÁČEK, Jana SOUKUPOVÁ, Radek ZBOŘIL	
SYNTHESIS OF ULTRA SMALL SILVER NANOPARTICLES USING Sn <sup>2+</sup> /Sn <sup>4+</sup> REDOX COUPLE AS STRONG REDUCTANT .....	609
Lucie HOCHVALDOVÁ, Libor KVÍTEK, Aleš PANÁČEK, Robert PRUCEK, Radek ZBOŘIL	
A NONSTATIONARITY OF SILVER HYDROSOLS FORMATION AND CHANGES OF NANOPARTICLES SHAPE AFTER «FREEZING» .....	615
Ekaterina KONONOVA, Irina MIKHALENKO, Viktor YAGODOVSKII	
AN EFFECTIVE TOOL TO CONTROL SPATIAL RESOLUTION COLLOID LITHOGRAPHY .....	621
Elena MILIUTINA, Olga GUSELNIKOVA, Roman ELASHNIKOV, Vasilii BURTSEV, Vaclav ŠVORČÍK, Oleksiy LYUTAKOV	
SURFACE CHARACTERIZATION OF TITANIUM AFTER ARGON SPUTTER CLEANING .....	626
Tomas HORAZDOVSKY, Zdenek TOLDE	
SYNTHESIS AND CHARACTERIZATION OF NANOPARTICLES USING MICROFLUIDICS .....	631
Aliye Hazal KOYUNCU, Ondřej KAŠPAR, Pavel ULBRICH, Viola TOKÁROVÁ	
LASER-GENERATED NANOPARTICLES TO CHANGE PHYSICAL PROPERTIES OF SOLIDS, LIQUIDS AND GASES .....	637
Alfio TORRISI, Mariapompea CUTRONEO, Giovanni CECCIO, Antonino CANNAVO', Pavel HORÁK, Lorenzo TORRISI, Jiří VACIK	
STUDY OF EFFICIENCY OF HALLOYSITE NANOTUBES DISPERSION IN POLY(VINYL ACETATE) MATRIX .....	647
Přemysl MENČÍK, Radek PŘIKRYL, Veronika MELČOVÁ	
PRODUCTION AND CHARACTERIZATION OF MICRO-SIZE PORES FOR ION TRACK ETCHING APPLICATIONS .....	652
Antonino CANNAVO', Vladimír HAVRANEK, Vasily LAVRENTIEV, Lorenzo TORRISI, Mariapompea CUTRONEO, Giovanni CECCIO, Alfio TORRISI, Pavel HORÁK, Jiri VACIK	
SOLID STATE SYNTHESIS OF IRON(III) OXIDE POLYMORPHS FROM PRUSSIAN BLUE WITH DIFFERENT MORPHOLOGY .....	659
Claudia APARICIO, Jiří TUČEK, Jan FILIP, Libor MACHALA	
SIMULATION OF ELECTRON INTERACTION WITH LIQUID WATER AND PROCESSES RELATED TO SUB-NANOSECOND ELECTRICAL BREAKDOWN .....	665
Petr BÍLEK, Zdeněk BONAVENTURA	
SORPTION OF ORGANIC DYE METHYLENE BLUE TO HUMIC SUBSTANCES .....	671
Jan RYBÁRIK, Martina KLUČAKOVÁ	
DETERMINATION OF THICKNESS REFINEMENT USING STEM DETECTOR SEGMENTS .....	677
Radim SKOUPÝ, Vladislav KRZYŽÁNEK	
INVESTIGATION OF ATMOSPHERIC PRESSURE PLASMA SURFACE MODIFIED ALUMINIUM OXIDE NANOPOWDER BY THERMAL DESORPTION SPECTROSCOPY .....	682
Ján DUGÁČEK, Lubomír PROKEŠ, Pavel ŠTAHEL, Jozef RÁHEĽ, Martina ILČÍKOVÁ	

MODIFICATION OF VARIOUS POLYMER SURFACES USING ATMOSPHERIC PRESSURE REDUCING PLASMA .....	688
Zdeňka DOUBKOVÁ, Zlata TUČEKOVÁ, Jakub KELAR, Richard KRUMPOLEC, Miroslav ZEMÁNEK	
MODIFICATION OF ELECTROMAGNETIC PROPERTY OF COPPER COATED MILIFE FABRICS.....	694
Mohanapriya VENKATARAMAN, Kai YANG, Aravin Prince PERIYASAMY, Xiaoman XIONG, Jiri MILITKY, Rajesh MISHRA	
STUDY OF LITHIUM ENCAPSULATION IN POROUS MEMBRANE USING ION AND NEUTRON BEAMS .....	701
Giovanni CECCIO, Antonino CANNAVO', Pavel HORAK, Alfio TORRISI, Ivo TOMANDL, Vladimír HNATOWICZ, Jiri VACIK	
NANOPLATINUM PREPARATION BY IRRADIATION METHODS IN MICELLAR SYSTEMS.....	707
Rostislav SILBER, Patrik BECK, Mojmír ČAMRA	
MONITORING OF RELEASED PARTICLES BY HEATING RF POLYMER FOR CONVERSION TO CARBON UNDER INERT ATMOSPHERE .....	714
Kristýna HRABOVÁ, Ján POLÁČIK, Vladimír ADAMEC, Barbora SCHÜLLEROVÁ, Ladislav ŠNAJDÁREK, Jiří POSPÍŠIL	
PHASE COMPOSITION OF CHOSEN Mg-BASED MATERIALS DURING HYDROGEN SORPTION .....	719
Jiří ČERMÁK, Lubomír KRÁL, Pavla ROUPCOVÁ	
ON-LINE MICROFLUIDIC SERS MESUREMENTS ON THE BASE OF SURFACE PLASMON-POLARITON EXCITATION.....	725
Vasilii BURTSEV, Elena MILIUTINA, Olga GUSELNIKOVA, Vaclav ŠVORČÍK, Olexiy LYUTAKOV	
INSTRUMENTATION FOR STUDY OF NANOMATERIALS IN NPI REZ .....	730
Václav BEJŠOVEC, Antonino CÁNNAMO, Giovanni CECCIO, Vladimír HNATOWICZ, Pavel HORÁK, Vasily LAVRENTIEV, Anna MACKOVÁ, Ivo TOMANDL, Alfio TORRISI, Jiří VACÍK	
CHARACTERIZATION OF OLD CONCRETE FOR NEW USE: GRID NANOINDENTATION AND SCANNING ELECTRON MICROSCOPY .....	736
Zdeněk PROŠEK, Pavel TESÁREK, Vladimír HRBEK	