

# 1 Technical Programme

Monday, June 12

08:30-09:00	<b>Registration</b>
09:00	<b>Opening</b> <ul style="list-style-type: none"> <li>• NASU Academician Anatoliy Zagorodniy, vice president of NASU</li> <li>• JRC Karl-Fredrik Nilsson (Workshop Chairman)</li> </ul>
09:20 – 10:10	<b>Session 1a Overview of National and international Research programmes/projects (S.A. Firtsov)</b> <ul style="list-style-type: none"> <li>• EU nuclear activities <ul style="list-style-type: none"> <li>○ The joint programme on nuclear materials of the European Energy Research Alliance (L. Malerba, Belgium)</li> <li>○ Overview of ATF research and ongoing experiments at the Halden reactor project ( R. Van Nieuwenhove, Norway)</li> </ul> </li> </ul>
10:10-10:30	<b>Coffee break</b>
10:30-11:30	<b>Session 1b Overview of National and international Research programmes/projects (L. Malerba)</b> <ul style="list-style-type: none"> <li>• PPP Initiative “Resource materials” the EU-UA high-tech cooperation (A. V. Ragulya, Ukraine)</li> <li>• Non-nuclear European projects (R&amp;D and engineering) <ul style="list-style-type: none"> <li>○ Concentrating Solar Thermal Systems:high radiant flux and temperature requirements. (E. Zarza, CIEMAT,Spain)</li> <li>○ Innovative high temperature material concepts drive clean energy technologies forward (P. Pohjanne, VTT, Finland)</li> </ul> </li> </ul>
11:30 – 12:00	<b>Session 2 High temperature degradation (K-F Nilsson)</b> <ul style="list-style-type: none"> <li>• Keynote Experimental Testing and Failure Analysis for High Temperature Plant Environments (C. Mair, Imperial College, UK)</li> </ul>
12:00 – 13:10	<b>Lunch</b>
13:10 – 14:50	<b>Session 2 High temperature degradation (K-F Nilsson)</b> <ul style="list-style-type: none"> <li>• Keynote Physically-based modelling of high temperature low cycle fatigue and thermo-mechanical fatigue for 9CR ferritic-martensitic steels (S. Leen, NUI Galway, Ireland)</li> <li>• Oral presentations <ul style="list-style-type: none"> <li>○ Research and development of coatings for Zirconium fuel claddings (A. Kuprin, Ukraine)</li> <li>○ Fractal nature of nano-micro structure and energy (V. Mitic, Serbia)</li> </ul> </li> </ul>
14:50 – 16:10	<b>Coffee Break &amp; Poster Session 1</b> 1) Steels and Alloys for Energy conversion; 2) High temperature ceramic materials; 3: Modelling)
16:10 – 17:40	<b>Session 3 Structural Materials Development for energy applications (M. Serrano)</b> <ul style="list-style-type: none"> <li>• Keynote Design of healable steels for energy applications (CEM Tasan, MIT USA)</li> <li>• Oral presentations <ul style="list-style-type: none"> <li>○ Materials resistant to extreme temperature and pressure for future hydrogen and steam turbines, modern 2- and 4-pole NPP turbogenerators (A. Balitskii, Ukraine)</li> <li>○ Materials under extreme energy and particle loads: from surface damage to surface modification (V. Makhlay, Ukraine)</li> <li>○ Multicomponent (high entropy) alloys as a basis for new generation of high-temperature materials (S.A. Firtsov, Ukraine)</li> </ul> </li> </ul>
19:30 – 21:30	<b>Workshop Dinner</b>

Tuesday, June 13

<b>09:00 -10:10</b>	<b>Session 3b Structural Materials Development for energy applications (continuation) (M. Serrano)</b> <ul style="list-style-type: none"> <li>• Keynote Effect of ausforming temperature on the microstructure of grade G91 steel (C. Capdevila, CENIM, Spain) <ul style="list-style-type: none"> <li>○ Micromechanical characterization of SiC-SiC fiber composite for accident tolerant fuel applications (Y. Zayachuk, UK)</li> </ul> </li> </ul>
<b>10:10 – 10:30</b>	<b>Coffee Break</b>
<b>10:30 – 12:30</b>	<b>Session 4 Irradiation damage (J. Jagielski)</b> <ul style="list-style-type: none"> <li>• Keynote, Statistical physics for the modeling of non-equilibrium metallic alloys driven by irradiation (M. Nastar, CEA, France)</li> <li>• Keynote Irradiation embrittlement and RPV metal service life: state-of-the-art and challenges (S. Kotrechko, IMP, Ukraine)</li> <li>• Oral <ul style="list-style-type: none"> <li>○ F/M steels - prospective materials for GEN IV reactors. Structural stability and swelling resistance during irradiation to high damage doses (V. Voyevodin, Ukraine)</li> <li>○ Radiation-induced softening vs. hardening effects in metals and alloys during simultaneous action of irradiation and mechanical strain (V.I. Dubinko, Ukraine)</li> <li>○ Radiation-induced formation of hardening solute clusters in ferritic/martensitic alloys: an object kinetic Monte Carlo model(L. Malerba, Belgium)</li> </ul> </li> </ul>
<b>12:30 – 13:45</b>	<b>Lunch</b>
<b>13:45 – 15:45</b>	<b>Session 5 Long-term Operation and Degradation Mechanisms (V. Voyevodin)</b> <ul style="list-style-type: none"> <li>• Keynote Use of surveillance programmes for life extension of RPVs (M. Brumovsky UJV , Czech Republic)</li> <li>• Keynote Irradiation embrittlement of austenitic stainless steels in PWR vessel's internals – experiments and modelling from micro to mesoscale (B. Tanguy, CEA, France)</li> <li>• Oral presentations <ul style="list-style-type: none"> <li>○ Progress in unified fatigue laws (M. Ciavarella, Italy)</li> <li>○ Mechanics of surface damage: A new look at the old problem of wear (R. Aghababaei, Switzerland)</li> <li>○ Nanofluids for emergency cooling of overheated surfaces of power equipment (B. Bondarenko, Ukraine)</li> </ul> </li> </ul>
<b>15:45 – 16:15</b>	<b>Session 6a Environmental and Corrosion Effects (O. Ivasishin)</b> <ul style="list-style-type: none"> <li>• Keynote Challenges of materials qualification for nuclear systems with heavy liquid metal coolant: Effect of LBE on materials property (S. Gavriliov, SCK•CEN, Belgium)</li> </ul>
<b>16:15 – 17:45</b>	<b>Coffee Break and Poster session 2</b> 4: Composite & Polymer-based materials; 5: Reactor materials; 6: others
<b>Evening</b> 17:45 – 19:15 19:00 – 21:00	<b>Social Event</b> (on participant's choice and expense) Walk in historical centrum of Kyiv National Opera and Ballet Theatre of Ukraine. Ballets: G. Bizet – R. Shchedrin, Carmen-suite & N. Rimsky-Korsakov, Sheherazade

## Wednesday June 14

<b>09:00 – 10:30</b>	<b>Session 6b Environmental and Corrosion Effects</b> <ul style="list-style-type: none"><li>• Keynote Electron Irradiation Test Facilities and methodologies for corrosion assessment and design of reactor structural materials (O. Bakai, KIPT, Ukraine)</li><li>• Oral presentations<ul style="list-style-type: none"><li>○ Corrosion issues in steels contacting Pb-Bi eutectic at high temperatures – overview of KIT activity (Tsisar, Germany)</li><li>○ For evaluation of in-service degradation of structural steels operated in aggressive environments,(O. Zvirko, Ukraine)</li><li>○ Basalt-boron fiber as reinforcement of composites for nuclear energy applications (V. Gulik, Ukraine)</li></ul></li></ul>
<b>10:30- 11:00</b>	<b>Summary &amp; Conclusions. Coffee break</b>
<b>11:00 – 13:30</b>	<b>Networking Session</b> <p>Short Presentations (max 15 minutes)</p> <ul style="list-style-type: none"><li>• JRC activities - possible field of cooperation with Ukraine (V. Esteban Gran, EC-JRC)</li><li>• RTD activities, EURATOM Work Plan and Action B5 on Ukraine (M. Serrano, CIEMAT)</li><li>• Euratom Working Programme 2016-2017 &amp; Objectives of EURATOM B5 action on UC-EU collaboration (G. Wrochna, NCBJ-Poland)</li><li>• The status and activities of EURATOM NCP-Ukraine ( O. Volobuyev, KIPT, Ukraine)</li></ul> Topics discussion <ul style="list-style-type: none"><li>- Possible projects in the area of Cybersecurity of critical infrastructures (S. Serwiak, NCP, Poland)</li></ul>
<b>13:30</b>	<b>End of Workshop</b>
<b>13:30 – 14:30</b>	<b>Lunch</b>
<b>14:30 – 17:30</b>	EURATOM/H2020 Training <ul style="list-style-type: none"><li>- Hints and Tips on H2020 Project Preparation - Merle Lust (2h 15') (coffee break)</li><li>- Discussion how to boost Ukrainian participation in EURATOM</li></ul>

## Poster Session 1, June 12

### Group 1. Steels and Alloys for Energy conversion 10 Posters

1. A METHODOLOGICAL APPROACH FOR SELECTING STEAM TURBINE BLADE MATERIALS SH. CASLLI TAJAJ1\*, E. LAMANI1, F. BIDA1 AND D. ELEZ11
2. FATIGUE BEHAVIOR OF 316L AUSTENITIC STEEL IN AIR AND LWR ENVIRONMENT WITH AND WITHOUT MEAN STRESS Wen Chen\*, Philippe Spätig, and Hans-Peter Seifert
3. EFFECT OF ANNEALING ON THE MICROSTRUCTURE AND HARDNESS OF IRRADIATED TUNGSTEN B. Horvath<sup>1\*</sup>, Y. Dai<sup>1</sup>, and Y. Lee<sup>2</sup>
4. DISPERSION REINFORCED ALLOYS FOR OPERATION UNDER EXTREME CONDITIONS OF HIGH TEMPERATURE PLASMA I. Husarova<sup>1</sup>, V. Solnchev<sup>2</sup>, A. Potapov<sup>1</sup>, T. Solncheva<sup>2</sup>, K. Petrash<sup>2</sup>, G. Frolov<sup>2</sup>
5. RECENT RESEARCH AND DEVELOPMENT OF ODS STEELS AS MATERIAL FOR EXTREME CONDITIONS, M. Ivanchenko\*, J. Lagerbom, P. Moilanen, J. Rantala, S. Penttilä, U. Ehrnstén
6. NANO INDENTATION CHARACTERIZATION OF T91 AND EUROFER STEELS FOR NUCLEAR APPLICATIONS, H. Namburi<sup>1\*</sup>, O. Libera<sup>1</sup>, A. Ruiz-Moreno<sup>2</sup>, L. Kurpaska<sup>3</sup>
7. NEUTRON DIFFRACTION STUDY OF IN-SITU STRAINED MARTENSITIC/FERRITIC OXIDE DISPERSION STRENGTHENED STEELS M.A. Pouchon<sup>1\*</sup>, S. Van Petegem<sup>2</sup>, A. Froideval<sup>1</sup> and J. Chen<sup>1</sup>
8. MICROSTRUCTURE AND MECHANICAL PROPERTIES OF AUSTENITIC ODS STEEL AND ODS HIGH ENTROPY ALLOY M.A.Tikhonovsky\*, V.N.Voyevodin, A.N.Velikodny, A.S.Kalchenko, I.V. Kolodiy, S.V. Starostenko, V.S. Okovit
9. IMPROVING OF PHYSICO-MECHANICAL AND TRIBOLOGICAL PROPERTIES OF THE Nb-Ti ALLOY BY THERMODIFFUSION OXIDATION Ratska N.B., Vasylyv Ch.B.\*
10. SOFTENING EFFECT AND FEATURES OF AN ELECTRONIC SPECTRUM OF HIGH-TEMPERATURE Mo-Re, Mo-Re-Nb ALLOYS O.Velikodnyi

### Group 2. High temperature ceramic materials 10 Posters

1. HIGH TEMPERATURE MATERIALS FOR MOST EFFECTIVE THERMIONIC CONVERTERS OF HEAT ENERGY INTO ELECTRICAL ONE - Dekhtyar
2. THE INFLUENCE OF IN SITU REACTIONS ON STRUCTURE AND MECHANICAL PROPERTIES OF ULTRA-HIGH-TEMPERATURE ZrB<sub>2</sub>-SiC AND ZrB<sub>2</sub>-SiC-C CERAMICS S. Chornobuk<sup>1</sup>, V. Vishnyakov<sup>2</sup>, O. Popov<sup>1, 3</sup> and A. Goncharenko<sup>1\*</sup>
3. MODIFICATION OF ZIRCONIA CERAMICS FOR OPERATION IN EXTREME CONDITIONS Danilenko<sup>1</sup>, T. Konstantinova<sup>1\*</sup>, I. Brukhanova<sup>1</sup>, G. Volkova<sup>1</sup>, V. Glazunova<sup>1</sup>, and V. Burkhovetskii<sup>1</sup>
4. LOW TEMPERATURE HEAT CAPACITY OF Gd<sub>2</sub>Hf<sub>2</sub>O<sub>7</sub> AS A PROMISING MATERIAL FOR IMMOBILIZATION OF NUCLEAR WASTE A. Kopan, M. Gorbachuk, S. Lakiza, Ya. Tischenko, D. Korablov\*
5. RADIATION RESISTANCE OF MgAl<sub>2</sub>O<sub>4</sub>- SPINELS: EFFECT OF 3d IONS ON DAMAGE RESPONSE, N.Mironova-Ulmane
6. ZrB<sub>2</sub> – BASED CERAMICS AND THERMAL SPRAYED COATINGS ON CARBON COMPOSITES, M. Parco<sup>1</sup>, I. Fagoaga<sup>1</sup>, L. Silvestroni<sup>2</sup>, Grigoriev<sup>3</sup>, I. Podcherniaeva<sup>3</sup>, I. Neshpor

7. OVERVIEW OF THEORETICAL AND EXPERIMENTAL STUDYING OF CRYSTALLINE CERAMICS IN SI IEG  
NASU B. Shabalin<sup>\*</sup>, B. Zlobenko, and S. Bugera
8. REINFORCING BASALT FIBER IN THE MANUFACTURE OF WIND TURBINES M. Shvangiradze
9. A LOW-TEMPERATURE FUEL CELL OPERATING ON HYDROGEN SULFIDE (H<sub>2</sub>S) T. Marsagishvili, E. Tskhakaia, G. Tatishvili<sup>\*</sup>, N. Ananiashvili, J. Metreveli, M. Kikabidze-Gachechiladze, M. Machavariani
10. MATERIALS AND PANELS FOR INTEGRATED THERMAL PROTECTION SYSTEMS O. Udovyk

Group 3 Modelling (12 June) 10 Posters

1. NUMERICAL INVESTIGATION THE EFFECTS OF GEOMETRICAL PARAMETERS ON FRACTURE CHARACTERISTICS OF NOTCHED SMALL PUNCH TESTING SPECIMENS. B. Deliktas<sup>1\*</sup>, IC Türtük<sup>1</sup>, and M. Sakaci<sup>1</sup>
2. SIZE EFFET AND INTER-GRANULAR LOCALIZATION IN POLYCRYSTALLINE MATERIALS Tuncay Yalçinkaya<sup>\*</sup>, Aytekin Demirci
3. FRACTURE ANALYSIS FOR LIFE TIME EXTENSION OF REACTOR PRESSURE VESSEL I. Orynyak<sup>1</sup>, Y. Dubyk<sup>1\*</sup>, and A. Orynyak<sup>2</sup>
4. COMPARISON OF DIFFERENT FINITE ELEMENT BASED APPROACHES FOR MODELING OF CARBON NANOTUBES O. Koca<sup>1</sup>, H. Gülaşık<sup>1</sup>, and E. Gürses<sup>1\*</sup>
5. MODELING AND DIAGNOSTICS OF THE BEHAVIOR OF NUCLEAR MATERIALS UNDER NORMAL OPERATING CONDITIONS AND THE ACTION OF EXTREME FACTORS A.V.Babich<sup>1</sup>, M.I.Bazaleev<sup>1</sup>, V.V.Brukhovetskiy<sup>1</sup>, S.Ye.Donets<sup>1</sup>, V.F.Klepikov<sup>1</sup>, V.V.Lytvynenko<sup>1\*</sup>, Yu. F.Lonin<sup>2</sup>, Ye.M. Prokhorenko<sup>1</sup>, A.G.Ponomarev<sup>2</sup>, V.T.Uvarov<sup>2</sup>
6. NUMERICAL PREDICTION OF RESIDUAL STRESSES IN THE PRESSURE VESSEL SHELL OF REACTOR WWER-1000 O. Makhnenko<sup>1\*</sup>, E. Velikoivanenko<sup>1</sup>, G. Rozyuka<sup>1</sup>, N. Pivtorak<sup>1</sup>, E. Kostenevich<sup>1</sup>
7. MODELING OF CONSTRAINED IRRADIATION-INDUCED SWELLING OF UC PELLETS IN FUEL RODS, A.L.Maximenko<sup>1\*</sup>, E.A. Olevsky<sup>2</sup>, O.Izhvanov<sup>3</sup>
8. MULTILEVEL MODELING DEFECT STRUCTURE FORMATION IN PURE ZIRCONIUM UNDER PARTICLE IRRADIATION D.O. Kharchenko, V.O. Kharchenko, Yu.M. Ovcharenko
9. AN XFEM BASED ALGORITHM FOR FATIGUE CRACK GROWTH PATH AND LIFE EVALUATION UNDER VARIABLE AMPLITUDE LOADING H.Dirik<sup>\*</sup>, T. Yalçinkaya
10. CHARACTERIZATION OF HOLD TIME INFLUENCES ON CYCLIC SOFTENING OF FERRITIC-MARTENSITIC STEELS Ulrich Führer<sup>\*</sup> and Jarir Aktaa

## Poster Session 2 June 13

### Group 4 Composite & Polymer-based materials (13 June)9 Posters

1. PERSPECTIVE DIRECTION FOR DEVELOPING NEW ELASTOMERIC MATERIALS USING NANOTECHNOLOGY M. Elkady<sup>1\*</sup> M. Khorolskiy<sup>2</sup> and A. Sanin<sup>3</sup>
2. HIGH TEMPERATURE RESISTANT POLYMER NANO- AND SUBNANOCOMPOSITES, A. Fainleib<sup>1\*</sup>, V. Bershtein<sup>2</sup>, O. Grigoryeva<sup>1</sup>, K. Gusakova<sup>1</sup>, D. Kirilenko<sup>2</sup>, O. Starostenko<sup>1</sup>, P. Yakushev<sup>2</sup>
3. MULTI-SCALE MODELLING OF CARBON NANOTUBE REINFORCED POLYMER COMPOSITES\*, Gözdenur Toraman<sup>1\*</sup>, Mine Konuk<sup>1</sup>, Hasan Gülaşık<sup>2</sup>, Elif Sert<sup>1</sup>, Hande Üstünel<sup>1</sup>, Ercan Gürses<sup>2</sup>
4. HIGH TEMPERATURE RESISTANT POLYMER NANOPOROUS FILMS O. Grigoryeva<sup>1\*</sup>, A. Fainleib<sup>1</sup>, O. Starostenko<sup>1</sup>, K. Gusakova<sup>1</sup>, E. Espuche<sup>2</sup>, D. Grande<sup>3</sup>
5. DEVELOPMENT OF DIMENSIONALLY STABLE STRUCTURE OF DRAWTUBE OF OPTICAL DEVICE MADE OF COMPOSITE MATERIAL V. Maslyey<sup>1</sup>, A. Kulyk<sup>1\*</sup>, A. Sanin<sup>2</sup>, S. Moskal'ov<sup>1</sup>, V. Kavun<sup>1</sup>, A. Schudro<sup>1</sup>
6. WIND ENERGY: MATERIALS DEVELOPMENT AND REQUIREMENTS Leon Mishnaevsky Jr.\*
7. FRACTAL NATURE OF WIND ENERGY V.V. Mitic<sup>1,2\*</sup>, Lj. Kocic<sup>1</sup>, D. Petković<sup>3</sup>, V. Paunovic<sup>1</sup>
8. NOVEL THERMOSTABLE NANOPOROUS POLYMER FILMS OF CYANATE ESTER RESINS DESIGNED BY USING IONIC LIQUIDS AS POROGENS Vashchuk A.<sup>1,3</sup>, Fainleib A.<sup>1</sup>, Starostenko O.<sup>1\*</sup>, Grigoryeva O.<sup>1</sup>, Rogalsky S.<sup>2</sup> and Grande D.
9. GRAPHENE: METHODS OF OBTAINING O.Usatova<sup>1\*</sup>, V.Kirichenko<sup>1</sup>

### Group 5 Reactor materials 11 Posters

1. STRUCTURAL MATERIALS CROSS-CUTTING ISSUES BETWEEN GENIV AND GENII/III FISSION REACTORS AND FUSION ENERGY SYSTEMS J. Kalivodová<sup>1</sup>, K-F. Nilsson<sup>2</sup>, M. Serrano<sup>3</sup>, M. Angiolini<sup>4</sup>, C. Pareige<sup>5</sup>, and L. Malerba<sup>6</sup>
2. MATHEMATICAL MODELLING OF IRRADIATION SWELLING OF THE REACTOR WWER-1000 CORE BAFFEL, S. Kandala<sup>1</sup>, O. Makhnenko<sup>1\*</sup>
3. GRAPHENE SEALS FOR NUCLEAR POWER PLANTS B. Bondarenko<sup>1\*</sup>, A.Kozhan<sup>1</sup>, V. Dmitriev<sup>1</sup>, E. Strativnov<sup>1</sup>, A. Khovavko<sup>1</sup>, V. Ryabchuk<sup>1</sup>
4. OBTAINING OF NANOSTRUCTURED ZIRCONIUM AND ZR-1%NB ALLOY AND ITS PROPERTIES, I.V. Kolodiy\*, A.N. Velikodnyi, V.N. Voyevodin, M.A. Tikhonovsky, N.F. Andrievskaya, G.Ye.Storozhilov
5. MINIMIZING THE RADIOACTIVE LEAKAGE INTO THE REACTOR CIRCUIT UNDER EXTREME CONDITIONS OF NORMAL OPERATION S. Pelykh\*, H. Zhou, M. Maksymov
6. THE SELF-POWERED NEUTRON DETECTOR WITH THE EMITTER OF HAFNIUM FOR DETECTING THERMAL AND RESONANCE NEUTRONS IN THE NUCLEAR REACTORS OF THE 2-3 GENERATIONS A.V. Rybka, V.E. Kutny, B.A. Shilyaev, A.L. Ulybkin, K.V. Kovtun, A.O. Pudov\*
7. AN ESTIMATION OF RADIATION EMBRITTLEMENT FOR WWER-1000 RPV WELD METAL USING THE CHARPY IMPACT AND FRACTURE TOUGHNESS TEST DATA V. Revka\*, L. Chyrko, Yu. Chaikovsky, O. Trygubenko, and O. Shkapyak
8. THERMOCHEMICAL FEATURES OF THERMAL TECHNOLOGY FOR DEEP PURIFICATION OF NATURAL GRAPHITE, Eugene Strativnov<sup>1</sup>, Yuriy Prazhenik<sup>1</sup>, Alex Kozhan<sup>1</sup>.

9. THE INFLUENCE OF HE ATOMS ON THE FORMATION OF SMALL VACANCY COMPLEXES IN HCP-BERYLLIUM. A. Timoshevskii<sup>1\*</sup>, B. Yanchitsky<sup>1</sup>, and A. Bakai<sup>2</sup>
10. A NEW METHOD FOR THE PREDICTION OF WWER RPV METAL CRITICAL TEMPERATURE OF BRITTLENESS, M. Zarazovskii<sup>1\*</sup> and I. Oryniak<sup>1</sup>
11. RESEARCH OF GRAPHITE <sup>14</sup>C WASTE FROM RBMK-TYPE REACTORS B. Zlobenko<sup>\*</sup>, G. Lysichenko, V. Skripkin, Yu. Fedorenko, and S. Bugera

#### Group 6 Others 10 Posters

1. USING ALLOYS AS ARTERIAL VESSEL IN THE HUMAN BODY M. M. Aish<sup>1,2\*</sup>, M.D. Starostenkov<sup>2</sup>
2. OPTICAL PROPERTIES OF CARBAZOLE BASED FERROMAGNETIC NANOCOMPOSITE MODIFIED BY UV IRRADIATION, E. Harea<sup>\*</sup>
3. NANOINDENTATION STUDY AND PHOTO-INDUCED EFFECTS IN AMORPHOUS (As<sub>2</sub>Se<sub>3</sub>)<sub>1-x</sub>: Sn<sub>x</sub> and (As<sub>4</sub>S<sub>3</sub>Se<sub>3</sub>)<sub>1-x</sub>: Sn<sub>x</sub> CHALCOGENIDES Diana Harea, Eugen Harea, Oxana Iaseniuc, Mihail Iovu
4. COOPERATION BETWEEN LOCAL AUTHORITIES Keren Energy<sup>1</sup>, O. Keren<sup>1</sup> *Keren Energy Ltd. Israel* ' Mr. Ofer Keren CTO
5. APPLICATION OF FRICTION TECHNIQUES TO MANUFACTURING OF ADVANCES STRUCTURAL MATERIALS, D.Kocanda
6. CORROSION DISSOLUTION SIMULATION FOR BINARY NANOCCLUSERS IN ENVIRONMENT OF LOW TEMPERATURE FUEL CELLS S. Korniy<sup>\*</sup>, V. Pokhmurskii, and V. Kopylets
7. DETERMINATION OF HYDROGEN IN ZIRCONIUM ALLOYS BY VACUUM HOT EXTRACTION USING GAS CHROMATOGRAPHY S. Danilchenko<sup>1</sup>, V. Kuznetsov<sup>1\*</sup>, V. Chivanov<sup>1</sup>, X. Wu<sup>2</sup>, L. Wu<sup>2</sup>, W. Zhang<sup>2</sup>
8. THE PROSPECTS OF CREATING NUCLEAR ENGINEERING BASED ON HELIUM-3 O. Prontsevych, I. Husarova
9. DESIGN AND MANUFACTURE OF TECHNOLOGICAL EQUIPMENT FOR THE MANUFACTURE OF SOLID PROPELLANT ROCKET ENGINE CASINGS K. Shylina<sup>1\*</sup>, A. Sanin<sup>2</sup>,
10. "GREEN" CORROSION INHIBITORS BASED ON BIOGENIC SURFACTANTS V.I.Pokhmurskii<sup>1</sup>, I.M.Zin<sup>1\*</sup>, S.A.Korniy<sup>1</sup>, O.V.Karpenko<sup>2</sup>