**Проекты 7РП с участием Беларуси**

1. **проекты, в которых белорусская организация является стороной по контакту с Еврокомиссией (включены контракты, подписанные на 10 августа 2013 г.)**

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| **№** | **Grant Agreement****Number** | **Belarusian Partner** | **Project Acronym** | **Project Title** | **Abstract** |
| 1 | 212226 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Olga Meerovskaya  | IncoNet EECA2008-2012 | S&T International Cooperation Network for Eastern European and Central Asian Countries | The project’s aim is to strengthen the Scientific and Technological cooperation between the EU Member States (and Associated Countries) and the Eastern European and Central Asian countries. To achieve its goals, the IncoNet EECA project will implement activities at both the policy and operational level. At the policy level the project will support the establishment and operation of a Regional S&T Policy Dialogue Platform bringing together national representatives/policy makers from the EU MS (and AC) and the EECA countries, as well as representatives of the European Commission. Similar Platforms will also be created at bilateral level addressing in particular the cooperation with Russia and Ukraine. The role of the Platforms will be to develop a strategy for the cooperation, to identify priority fields for actions, to discuss joint approaches on global issues, etc. In addition, within the project, a particular attention will be paid to other EU policies and instruments (e.g. ENP, CIP) focusing in particular on the opportunities and synergies that may arise for the S&T sector. At the operational level the project includes a variety of activities aiming at: an enhanced participation of researchers from the EECA countries in FP7; the support of NCP/NIP structures in EECA with particular emphasis on the ININ network set up by INTAS; dissemination activities including key conferences, etc. In addition, the project includes a series of analyses, reviews and monitoring activities that will feed the policy dialogue at the level of the aforementioned Platforms. Finally, a particular attention will be given to the issue of sustainability beyond the limits of the project, for all the activities and structures that will be supported. <http://www.inco-eeca.net>; <http://www.increast.eu>  |
| 2 | 214685-2 | Minsk State Medical University,Vitaly Goranov  | MAGISTER2008-2011 | Magnetic Scaffolds for in vivo Tissue Engineering | The main driving idea of the project is the creation of conceptually new type of scaffolds able to be manipulated in situ by means of magnetic forces. This approach is expected to generate scaffolds with such characteristics as multiple use and possibly multipurpose delivery in order to repair large bone defects and ostheocondral lesions in the articular surface of the skeletal system. The major limitations of the scaffolds for bone and cartilage regeneration nowadays available in the market are related to the difficulties in controlling cell differentiation and angiogenesis processes and to obtain stable scaffold implantation in the pathological site. . . Several attempts have been performed over the last years in order to provide scaffolds for tissue engineering, but nowadays there is no way to grant that tissue regeneration take place in the pathological site. The provision in vivo of the scaffold with staminal cells or /and growth factors in order to drive the tissue differentiation process and parallel angiogenesis represents nowadays one of most challenging requests [Ref. Nanomedicine roadmap]. The Consortium aims to elaborate, investigate and fabricate new kind of scaffolds – magnetic scaffolds (MagS) - characterized by strongly enhanced control and efficiency of the tissue regeneration and angiogenic processes. The magnetic moment of the scaffolds enables them with a fascinating possibility of being continuously controlled and reloaded from external supervising center with all needed scaffold materials and various active factors (AF). Such a magnetic scaffold can be imagined as a fixed “station” that offers a long-living assistance to the tissue engineering, providing thus a unique possibility to adjust the scaffold activity to the personal needs of the patient. <http://www.magister-project.eu>  |
| 3 | 217152 | Belarusian State University,Faculty of Philosophy and Social Sciences,Larisa Titarenko  | NET4SOCIETY2008-2011 | Trans-national co-operation among National Contact Points for Socio-economic sciences and the Humanities | A strong and efficient Network of National Contacts Points (NCP) is not only elementary to the success of the Seventh EU Framework Programme but also to the realization of the European Research Area. The trans-national project “NET4SOCIETY” will strive to achieve this declared goal. For its proposed duration of three years, “NET4SOCIETY” will support the creation and establishment of a functional Network of Socioeconomic Sciences and the Humanities (SSH)-NCPs. “NET4SOCIETY” will offer specific high quality training sessions (based on a questionnaire that will be sent to all SSH-NCPs), dedicated workshops, and mentoring and brokerage events. The project will provide targeted tools such as a best practice handbook and a database for the specific area of “Socioeconomics and the Humanities”, including a refined partner-search tool. These tools will be published on the project’s dedicated Internet site (www.net4scociety.eu). Through the project “NET4SOCIETY” the first network of SSH-NCPs will be created. The Network consists of a total of 37 beneficiaries, including four NCPs from International Cooperation Partner Countries (ICPCs). A core group of Work Packages leaders, including the Third Country Task Force Leader, will work closely together with the Co-ordinator to implement the project’s objectives. All beneficiaries and natural members will be involved in the surveys, which build the foundation of several Network activities, will have access to all Network events and tools. NET4SOCIETY is opened to all SSH-NCPs, including those who have declined their official participation. All network beneficiaries and “natural members” will be informed on a regular basis; they will have the possibility to contribute to the project’s objectives, participate in the network events and benefit fully from the projects results. <http://www.net4society.eu>  |
| 4 | 217227 | Belarusian State University,Center For Social and Political Studies,David Rotman | ENRI-East2008-2011 | Interplay of European, National and Regional Identities: nations between states along the new eastern borders of the European Union | The proposed research project is aimed at an in-depth understanding of the ways in which the modern European identities and regional cultures are formed and inter-communicated in the Eastern part of the European continent. The project is an inter-disciplinary effort (sociology, political science, history, ethnography). Its methodological thrust is empirical and comparative; new data complementing prioritiess will be generated. On top of that, the project pursues the objective to verify and advance existing theoretical and methodological frameworks for ethnic studies as well studies of identities and nationalism. In order to account for the diversity encountered in the field and to adequately identify the main factors in the identity formation process, ethnic groups, which are part of larger titular nations and are divided by the new European frontier toward the New Independent States are studied. Altogether, 8-10 million people have been affected by politically set boundaries. The project clusters based on major themes such as “Formation and interplay of identities and ethnic cultures in Europe”, “Nations between states”, “Self-governance, representation and citizenship”, “Historical memory and dynamic trajectories of the development of ethnic minorities in Eastern Europe”. Project assumes a detailed study of a sample of 10 ethnic minorities in EE by the means of a series of quantitative and qualitative surveys focusing on the identities and values issues. Four regional workshops and a final conference will conclude the project. <http://www.enri-east.net>  |
| 5 | 223359 | Institute of Biophysics and Cell Engineering, NAS Igor Volotovsky | EECAlink | Promotion and facilitation of international cooperation with Eastern European and Central Asian countries | EECAlink is a coordination action aimed at identification of joint research priorities of the EU and EECA countries and strengthening scientific collaboration among them. International Cooperation Partner Countries targeted by our proposal are: Armenia, Belarus, Georgia, Kazakhstan, Moldova, Russia, Ukraine and Uzbekistan.EECAlink represents (i) a measure of active encouragement of the international Health research related cooperation and allows (ii) strengthening of the existing bi-lateral scientific collaboration of all participating university/academia partners. Project consortium was balanced to be able to act as a pipe-line for communication of the (iii) research priorities of EECA countries to relevant EU policy makers and vice versa, (iv) help to coordinate future joint calls relevant to the Health Theme. Last, but not least, (v) to build capacities for proposal submission in FP7.EECAlink is proposed to run for 30 months. During these months more than 35 individual events will take place. Each event will be organized separately and have a different target audience as well as a tailored communication strategy. For the project communication and impact evaluation purposes, we have defined three major target stakeholder groups:1. Policy makers – this target group is further divided into (i) European and (ii) national. The first stakeholder group represents a key element for creation of European added value through identification of joint research opportunities for future calls in the area of Health research 2. Universities and academia partners – the project is coordinated by the Charles University in Prague and represents a consortium of ten academic partners, who wish to both strengthen and extend their international collaboration in topics identified in FP7-TP Health programme 3. Wider RTD public – research and innovation managers and individual scientific group leaders from participating countries interested in submitting own FP7 proposals. [http://www.eecalink.eu](http://www.eecalink.eu/) |
| 6 | 223344 | State Institute of Management and Social TechnologiesBelarusian State University,David Rotman | HITT-20082009-2013 | Health in Times of Transition: Trends in Population Health and Health Policies in CIS Countries | Goal: To understand long-term trends of population health as a consequence of socio-economic transitions, with a focus on lifestyle-related issues. Overviews: A unique team with extensive expertise in health effects of transition will generate new knowledge on health determinants in 11 CIS countries: Russia, Belarus, Ukraine, Moldova, Kazakhstan, Uzbekistan, Kyrgyzstan, Armenia, Azerbaijan, Georgia and Tajikistan. It employs a model of health determinants acting at individual and societal level, with distal and proximal influences on health. It focuses on alcohol, tobacco, diet, and health care, each linked to diseases specified in the call. Objectives: a) measure and explain prevalence and distribution of risk factors, health outcomes, and their social, cultural, and economic determinants; b) develop and implement validated community profiles to capture the opportunities and obstacles to leading a healthy lifestyle (in relation to diet, alcohol, smoking); c) assess health system performance, focussing on accessibility and quality of health services; d) quantify the cost of ill health through reduced labour supply and productivity; e) identify opportunities for and obstacles to policy change (alcohol and tobacco) in Russia: f) market analysis (alcohol & tobacco); g) regional analysis of alcohol -related mortality in Ukraine. Methods (corresponding to objectives): a) Large scale household surveys, multiple regressions; b&c) Rapid appraisal using structured observation, mapping, media analysis, interviews, focus groups d) econometric modelling (instrumental variables) e) stakeholder analyses f) econometrics g) multivariate analysis Finally, the project will bring concrete benefits by influencing policy in ways that will support health by: · disseminating findings within each country and to EU policymakers and international researchers; · identifying policy implications based upon informed research.<http://cordis.europa.eu/fetch?CALLER=FP7_PROJ_EN&ACTION=D&DOC=5&CAT=PROJ&QUERY=012d33ed9c8a:bbee:19cfd5d2&RCN=91038>  |
| 7 | 223807 | United Institute of Informatics Problems, NASVladimir AnishchenkoBelarusian National Technical University,Igor Miklashevich | BalticGrid-II2008-2010 | Baltic Grid Second Phase | The Baltic Grid Second Phase (BalticGrid-II) project is designed to increase the impact, adoption and reach, and to further improve the support of services and users of the recently created e-Infrastructure in the Baltic States.This will be achieved by an extension of the BalticGrid infrastructure to Belarus; interoperation of the gLite-based infrastructure with UNICORE and ARC based Grid resources in the region; identifying and addressing the specific needs of new scientific communities such as nano-science and engineering sciences; and by establishing new Grid services for linguistic research, Baltic Sea environmental research, data mining tools for communication modelling and bioinformatics.The e-Infrastructure, based on the successful BalticGrid project, will be fully interoperable with the pan-European e-Infrastructures established by EGEE, EGEE associated projects, and the planned EGI, with the goal of a sustained e-Infrastructure in the Baltic Region.The present BalticGrid e-Infrastructure of 26 clusters in five countries is envisaged to grow, both in capacity and capability of its computing resources.The consortium is composed of 13 leading institutions in seven countries, with 7 institutions in Estonia, Latvia and Lithuania, 2 in Belarus, 2 in Poland, and one each in Sweden and Switzerland.The overall vision is to support and stimulate scientists and services used in the Baltic region to conveniently access critical networked resources both within Europe and beyond, and thereby enable the formation of effective research collaborations. <http://www.balticgrid.org>  |
| 8 | 231367 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Tatyana Lyadnova | Idealist20112008-2011 | Trans-national cooperation among ICT NCPs | The main objective of Idealist2011 is reinforcing the network of National Contact Points (NCP) for ICT under FP7, by promoting further trans-national cooperation within this network. This cooperation will not be reduced to only ICT NCPs but also a degree of collaboration and networking with similar networks in parallel themes (Security, SSH, ENV, Transport, Energy, Health,etc) especially in the context of joint/coordinated calls will be covered. Special focus is put on helping less experienced NCPs from Member States (MS) and Associated States (AS) to access the know-how accumulated in other countries and to apply it in a locally relevant and efficient manner. Furthermore Idealist2011 aims to address national and cross-border audiences, relying on the NCP network mainly established in the MS and AS at national and regional level, to stimulate, encourage and facilitate the participation in current and future Community ICT research of organisations of all types. Special focus is put on newcomers and SMEs, including organisations from MS, AS and 3rd countries which comprise countries from Eastern Europe Partner Countries (EEPC), Mediterranean Partner Countries (MPC) and selected 3rd coubtries with high technical and economical potential. The activities of Idealist2011 are incremental to the formal NCP responsibilities as they address the international aspects not covered by the nationally funded NCP role. It is built upon: - Experience gained over more than 13 years from the 6 preceding projects covering FP4 to FP7 - Strengthening NCP cooperation with support for MS, AS and ICPC - Provision of Training and Twinning for the less experienced NCPs - Provision of partner search quality support - Focused support for SMEs in the ICT sector and for organisations new to the FP - Provision of NCP support for countries with S&T international agreements - Promotion of opportunities and Idealist services ensuring a higher visibility of the NCPs.<http://www.ideal-ist.eu>  |
| 9 | 231137 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Tatayna Lyadnova | EXTEND2009-2011 | Extending ICT research co-operation between the European Union, Eastern Europe and the Southern Caucasus | The European Union promotes the scientific and technological co-operation with the Eastern European and Southern Caucasus (EESC) countries, aiming firstly to restore and reinforce their research capacity and secondly to integrate them in the European Research Area. The Seventh Framework Programme comprises one of the main instruments that is exploited towards this direction, as international co-operation represents an important dimension of it. The EXTEND project addresses the need for enhanced scientific and research co-operation between the EESC countries and the EU, focusing specifically on the Information and Communication Technologies theme of the FP7’s Co-operation Programme. EXTEND aims to support the ICT research communities in the region by: (a) identifying suitable ICT research actors per country, training them on the procedural aspects of FP7 and providing assistance in developing networks across Europe and (b) defining future ICT research priorities that will enhance co-operation between the EU and EESC countries. The specific objectives of the EXTEND project are to: (1) Identify key ICT research actors (including academic, private IT sector and not-for-profit research actors) in the EESC countries that are suitable for participation in future ICT research activities. (2) Develop recommendations on ICT research priorities that are suitable for co-operation between the EU and EESC countries, for the period 2010-2015 following consultation with key ICT research stakeholders.(3) Provide training on FP7 ICT programme opportunities, procedures and thematic priorities to the identified ICT research actors as well as familiarise them with the European R&D culture.(4) Facilitate the development of networks between ICT research actors in EESC and the EU in order to exchange ideas and pursue joint research collaboration.<http://www.extend-ict.eu>; <http://www.eeca-ict.eu/eeca>  |
| 10 | 231148 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Tatayna LyadnovaBelarusian State University of Informatics and Radioelectronics Vladimir LabunovUnited Institute of Informatics Problems, NASAleksei Belotserkovsky | SCUBE-ICT2009-2010 | Strategic Cooperation between Ukraine, Belarus and EU in Information and Communication Technologies | EU, Belarus and Ukraine face common ICT R&D opportunities and challenges that create a favourable environment for strategic collaboration. The main aim of SCUBE-ICT is to increase co-operation between ICT researchers from the three regions. The project will achieve its overall aim via a range of activities: 1. Assessing the ICT collaboration potential for the three regions. This involves production of a “White Paper on ICT R&D in Belarus and Ukraine”; mapping the Belarusian and Ukrainian ICT actors; reporting on opportunities for Bel/Ukr ICT actors in the EU; and reporting on opportunities for EU ICT actors in Bel/Ukr; 2. Organising awareness-raising and training events about the EC’s ICT R&D programmes for Bel/Ukr ICT actors. Also, organising networking/partnership events with motivated EU and Bel/Ukr ICT actors to initiate research collaborations between them;3. Providing advanced support services to competent Bel/Ukr ICT actors to build long-term relationships with key EU counterparts. Central to this will be implementation of Joint Action Plans, which are mini roadmaps describing in detail how to reach research collaboration goals; 4. Enhancing ICT R&D policy dialogue between policy makers and stakeholders from EU and Bel/Ukr ICT communities. ICT R&D Policy Working Groups will be established in Bel/Ukr that meet to discuss co-operation in areas of mutual interest and develop a Road Map towards a Joint Strategy in ICT R&D. The SCUBE-ICT project’s measurable results will include: a. Website and online database with information about 100-150 ICT actors in Bel/Ukr; b. 4 awareness raising/training events in Bel/Ukr concerning FP7 ICT; c. 6 ICT networking events; d. Support to at least 15 Bel/Ukr ICT actors to establish Joint Action Plans with EU actors; e. Support to at least 10 Bel/Ukr ICT actors to make FP7 proposals; f. ICT R&D Policy Working Groups involving EU and Bel/Ukr; and g. Roadmap towards a Joint Strategy in ICT R&D.<http://www.scube-ict.eu>; <http://www.eeca-ict.eu/eeca> |
| 11 | 231665 | Republican Center for Technology Transfer,Alexander Uspensky | ISTOK-SOYUZ2009-2011 | Information Society Technologies to Open Knowledge for Eastern Europe and Central Asia | The ISTOK-SOYUZ project, based on the sound outcomes and lessons learnt of the ISTOK.Ru project www.istok-ru.eu implemented in Russia in 2006-2008, will expand the ISTOK experience to the Eastern Europe & Central Asia countries, identifying and promoting visibility of mutual RTD potential and collaboration opportunities. The project will : (1) promote the EU ICT programme, raise awareness about benefits of mutual collaboration; (2) identify potential for R&D ICT collaboration between the European Union and 12 addressed countries of Eastern Europe and Central Asia; (3) expand the EU-Russian ICT research community to 4 targeted countries (Ukraine, Belorussia, Armenia and one more country to be selected) through the opening of an ISTOK competence platform and implementing pilot actions such as networking & brokerage events and assistance to integration into the European Technology Platforms and Networks of Excellence; (4) provide support to research teams from the targeted countries with the goal of increasing the number of ICT FP7 partnerships between researchers from Europe and targeted countries. The project activities will be done in collaboration with national stakeholders and other relevant co-operation projects in view of exploiting synergies and maximizing impact.<http://www.eeca-ict.eu/eeca> |
| 12 | 263924 | Belarusian State University,Faculty of Philosophy and Social Sciences,Larisa Titarenko | NET4SOCIETY22012-2013 | Trans-national co-operation among National Contact Points for Socio-economic sciences and the Humanities (SSH NCPs) | This project supports the activities of SSH NCP network (over 60 NCPs in 2012) to continue activities started within the NET4SOCIETY project, see above.<http://www.net4society.eu> |
| 13 | 266529 | Institute of Nuclear Problems,Belarusian State University,Sergey MaksimenkoBelarusian Institute of System Analysis and Information Support of S&T Sphere,Olga MeerovskayaS&T Park BNTU “Polytechnic”Yuri Alekseev | BY-NANOERA2010-2013 | Institutional Development of Applied Nanoelectromagnetics: Belarus inERA Widening | The project aims at reinforcing RTD and cooperation capacities of the Institute for Nuclear Problems of Belarusian State University in the area of applied nanoelectromagnetics. This new research discipline comprising the classical electrodynamics of microwaves and present-day concepts of condensed matter physics is covered by the FP7 Theme 4 'Nanosciences, Nanotechnologies, Materials and new Production Technologies – NMP'. INP BSU is the founder and leading research center in Belarus in this area. Within the project a set of complementary networking and training activities is foreseen with a strong involvement of already existing and new partners from EU member states and associated countries. Besides, based on research results and their applications in material sciences and medicine, and also taking in consideration the emerging socio-economic needs in Belarus and EU, a strategy of the INP BSU further development will be proposed. All together, the activities willsupport national RTD in applied nanoelectromagnetics, contribute to young researchers’ career development, intensify information and experience exchange between Belarus and EU teams thus contributing to creation of the European research network in applied nanoelectromagnetics, as far as increase visibility of INP BSU in the European Research Area and its participation in the FP7. Also, the strategy developed for INP BSU will beproposed and disseminated as a model for the integration of the other Belarus teams into European Research Area.<http://www.nano.bsu.by>  |
| 14 | 266111 | National Academy of Sciences of Belarus,Natalia Yankevich | MARTEC II2011-214 | ERA-NET Maritime Technologies II | MARTEC II is supported by the European Commission ERA-Net scheme under the Seventh Framework Programme (2011-2014). An ERA-NET on maritime technologies (MARTEC) began with 12 ministries and funding organisations from 9 European countries in 2006. MARTEC quickly formed a strong network and has launched calls in 2008, 2009 and in 2010. So far applications for proposals have involved participants from 8 countries, and projects funded total about 14 million Euros. Given the success of the first phase, 28 ministries and funding organisations from 24 countries are involved in MARTEC II now.MARTEC II will move from a basic understanding of each other’s procedures and priorities to real information exchange based on trust and actively looking to work with partners across national borders.MARTEC II will: * Broaden the geographical scope through the inclusion of new countries.
* Intensify cooperation by launching calls and joint programmes.
* Strengthen the dissemination of waterborne research results throughout Europe.
* The structuring of maritime research will be better coordinated through a programme database and research mapping.
* There will be information exchange and stronger cooperation between MARTEC and WATERBORNETP, other ERA-NETs (e.g. TRANSPORT II) as well as other initiatives, such as the network SURSHIP, which is essential for future activities.
* MARTEC will also establish future structures for a sustainable network.

<http://www.martec-era.net>  |
| 15 | 262922 | Institute of Physics, NASEleonora Zege | SIDARUS2010-2014 | Sea ice downstream services for Arctic and Antarctic Users and Stakeholders | **The overall objective is to develop and implement a set of sea ice downstream services for polar users and stakeholders in the area of climate research, marine safety and environmental monitoring. SIDARUS will extend the present GMES services with new satellite-derived sea ice products, ice forecasting from regional models and validation of sea ice products using in situ data.****Specific objectives:** **(1)**  **Develop sea ice classification and iceberg detection using new high-resolution SAR images with different frequency and polarization, and implement a monitoring service based on SAR data from Sentinel-1****(2)**  **Provide sea ice thickness data for thin ice (<≈ 0.5 m) using the new 1.4 GHz passive microwave data from SMOS, as a complement to the ice thickness data from CryoSat****(3)**  **Collect and analyze data on sea ice thickness and other ice parameters data from airborne, in situ and underwater platform experiments in order to validate satellite retrievals and fill gaps in sea ice observations that satellite data cannot provide****(4)**  **Develop and validate sea ice albedo retrieval from multi-spectral optical images, e.g MODIS on the EOS platforms and MERIS and AATSR on ENVISAT****(5)**  **Provide integrated maps of marine mammal tracks from ARGOSS data and sea ice maps from satellite data****(6)**  **Implement a high-resolution operational ice-ocean model in order to provide sea ice and iceberg forecasts on regional and local scale****(7)**  **Demonstrate sea ice monitoring and forecasting services to user groups by integration of  observational products from several platforms and simulation/forecasting products from global and regional models using GIS and web technology****(8)**  **Plan sustainable sea ice downstream services for GMES, consisting of both free-of-charge and commercial productsю** <http://sidarus.nersc.no> |
| 16 | 262254 | Institute of Physics, NASAnatoly Chaikovsky | AСTRIS2011-2015 | Aerosols, Clouds, and Trace gases Research Infrastructure Network  | ACTRIS (**A**erosols, **C**louds, and **T**race gases **R**esearch **I**nfra**S**tructure Network) is a European Project aiming at integrating European ground-based stations equipped with advanced atmospheric probing instrumentation for aerosols, clouds, and short-lived gas-phase species. ACTRIS will have the essential role to support building of new knowledge as well as policy issues on climate change, air quality, and long-range transport of pollutants. ACTRIS is building the next generation of the ground-based component of the EU observing system by integrating three existing research infrastructures [EUSAAR](http://www.eusaar.net/index.cfm), [EARLINET](http://www.earlinet.org/), CLOUDNET, and a new trace gas network component into a single coordinated framework. ACTRIS is funded within the EC 7th Framework Programme under "Research Infrastructures for Atmospheric Research". [http://www.actris.net](http://www.actris.net/) |
| 17 | 261323 | United Institute of Informatics Problems, NASSerge Salamanka | EGI-INSPIRE2010-2014 | Integrated Sustainable Pan-European Infrastructure for Researchers in Europe | The ultimate goal of EGI-InSPIRE is to provide European scientists and their international partners with a sustainable, reliable e-Infrastructure that can support their needs for large-scale data analysis. This is essential in order to solve the big questions facing science today, and in the decades to come.EGI-InSPIRE will coordinate the transition from a project-based system (the EGEE series) to a sustainable pan-European e-Infrastructure. The four-year project will support grids of high-performance computing (HPC) and high-throughput computing (HTC) resources.The project is ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit the user communities within the European Research Area.EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example the ESFRI projects. The project will also support the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities. [http://www.egi.eu/projects/egi-inspire](http://www.egi.eu/projects/egi-inspire/) |
| 18 | 260694 | Belarusian State Medical UniversityIgor Karpov | EUROCOORD2011-2016 | Enhancing clinical and epidemiological HIV-research in Europe through cohort collaboration | **EuroCoord is a Network of Excellence established by several of the biggest HIV cohorts and collaborations within Europe -** [**CASCADE**](http://www.eurocoord.net/partners/founding_networks/cascade.aspx)**,** [**COHERE**](http://www.eurocoord.net/partners/founding_networks/cohere.aspx)**,** [**EuroSIDA**](http://www.eurocoord.net/partners/founding_networks/eurosida.aspx)**, and** [**PENTA**](http://www.eurocoord.net/partners/founding_networks/penta.aspx)**.** This large, integrated network exploits the scientific strengths of each collaboration to ensure that the best, most competitive HIV research is performed. The main advantage of this collaborative method of working is the formation of a common virtual database, which currently has access to data from over 250,000 HIV positive people from many different settings in Europe and beyond. EuroCoord is made up of 23 [beneficiaries](http://www.eurocoord.net/partners/beneficiaries.aspx) chosen from 16 different countries to ensure representativeness across Europe. The nature of the collaboration means that apart from these partners, there is also an associated network of numerous affiliated sites – more than 100 collaborating centres, or [third parties](http://www.eurocoord.net/partners/third_parties.aspx).  The tasks of EuroCoord are organised into 15 different [workpackages](http://www.eurocoord.net/workpackages.aspx), all of which are interrelated, and unified through the [scientific oversight](http://www.eurocoord.net/workpackages.aspx#wp3) workpackage.  EuroCoord is funded for a period of 5 years as part of the European Commission’s Framework Programme 7. EuroCoord’s multidisciplinary approach allows the following key areas of HIV research to be addressed, aimed at improving the management and life of HIV-infected individuals, whilst allowing us to explore differences within sub-groups:Characterising HIV infected populations in Europe (including the epidemiology of different subtypes)Improving our understanding of pathogenesis (including understanding the mechanisms of non-progression)Documenting uptake of and response to therapyEvaluating the implications of long-term HIV infection and exposure to therapyAssessing the implications of specific management strategiesImproving the management of hepatitis co-infectionTuberculosis (TB) among HIV-infected patientsHIV and AIDS in migrant populations in EuropeModelling the HIV infected population in Europe.The Network also aims to use its expertise to establish training programmes to improve research skills. These will include courses in statistical techniques to allow researchers to undertake observational research of the highest calibre, and to provide basic and updated laboratory and clinical training to aid the management of HIV-infected patients. <http://www.eurocoord.net>  |
| 19 | 288598 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Tatyana Lyadnova | Idealist20142011-2014 | Trans-national cooperation among ICT NCPs | The main objective of Idealist2014 is reinforcing the network of National Contact Points (NCP) for ICT under FP7, by promoting further trans-national cooperation within this network. This cooperation will not be reduced to only ICT NCPs but also a degree of collaboration and networking with similar networks in parallel themes (Security, SSH, ENV, Transport, Energy, Health,etc) especially in the context of joint/coordinated or PPP calls will be covered. Special focus is put on helping less experienced NCPs from Member States (MS) and Associated States (AS) to access the know-how accumulated in other countries and to apply it in a locally relevant and efficient manner. Furthermore Idealist2014 aims to address national and cross-border audiences, relying on the NCP network mainly established in the MS and AS at national and regional level, to stimulate, encourage and facilitate the participation in current and future Community ICT research of organisations of all types. Special focus is put on newcomers and SMEs, including organisations from MS, AS and ICPCs which comprise countries from Eastern European Partner Countries (EEPC), Mediterranean Partner Countries (MPC) and selected ICPCs with high technical and economical potential. The activities of Idealist2014 are incremental to the formal NCP responsibilities as they address the international aspects not covered by the nationally funded NCP role. It is built upon: -Experience gained over more than 15 years from the 7 preceding projects covering FP4 to FP7 and now the transition to FP8 -Strengthening NCP cooperation with support for MS, AS and ICPCs -Provision of Training and Twinning for less experienced NCPs -Provision of partner search, pre- and full proposal quality support -Focused support for SMEs in the ICT sector and for organisations new to the FP -Provision of NCP support for countries with S&T international agreements -Promotion of opportunities and Idealist services ensuring a higher NCP visibility<http://www.ideal-ist.eu> |
| 20 | 288279 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Tatyana Lyadnova | PICTURE2011-2014 | Policy dialogue in ICT to an Upper level for Reinforced EU-EECA Cooperation | Following the tradition of scientific collaboration between EU and the EECA region, and built on the sound outcomes and lessons learnt of three clustering projects (ISTOK-SOYUS, SCUBE and EXTEND), a group of leading EU and EECA specialists from twelve countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russian federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan) with complementary competences have come together in the PICTURE project with the sole purpose to bring the ICT R&D policy dialogue and cooperation between EU and EECA to an upper level. The overall aim of the project is to engage the EU and EECA stakeholders from across research, academia, industries, government and civil society to enrich and support the EU-EECA ICT Policy Dialogue, and to reinforce strategic partnerships between EU and EECA ICT organizations.To reach the objective of the project, the consortium will:-Update the EU-EECA ICT priorities for cooperation and provide an overview of the EECA ICT policy dialogue, currently existing in the region-Enrich the Policy Dialogue process and meetings between the EU and EECA, encompassing findings from policy research and stakeholder views dealing with common R&D perspectives, priorities, opportunities and challenges-Set up and animation of working groups, focusing on Computing Systems, Internet of Services and ICT Policy-Organisation of 3 workshops on Computing Systems, Internet of services and ICT Policy topics, with ten working groups meetings, providing input and follow up,-Implement pilot projects that would be different in each country-Recommend future co-operation initiatives-Explore and recommend existing EECA programmes in order to open new perspectives for participation of the EU ICT teamsAs final outcome, the project will present recommendationsand strategies for reinforcement of bilateral and multilateral cooperation, covering the large geographical area of the EECA countries. <http://www.eeca-ict.eu>  |
| 21 | 283334 | United Institute of Informatics Problems, NAS | ORIENTplus2011-2014 | Linking European and Chinese Research Infrastructures and Communities | Between 2007 and 2010 the ORIENT project provided the first high capacity link between [GÉANT](http://www.geant.net) and China with FP6 funding support and successfully enabled many innovative EU-China research and application collaborations to flourish. ORIENTplus is created to maintain and further develop infrastructure between [GÉANT](http://www.geant.net) and China that is open for use by all European and Chinese researchers. The main focus of this project is to support the infrastructure link.A key objective is to upgrade the link during the term of ORIENTplus to meet the growing capacity demands and provide a wider range of services. The ORIENTplus will upgrade previous link from 2.5 Gbps to 2x2.5 Gbps or even to 10 Gbps. Once upgraded, it is planned that the ORIENTplus link will operate in hybrid mode, to carry both IP and point-to-point (lightpath) services. A second objective is to ensure that ORIENTplus connectivity will be used to greatest effect by the EU and Chinese user communities. It is planned to optimize and enhance the Europe-China connectivity by supporting the deployment of services and tools such as perfSONAR (for network performance monitoring), eduroam (roaming access service for the research and education community) and Bandwidth on Demand service (to enable dynamic path establishment). In addition the proposal sets out unfunded supporting activities to optimise the performance of the link, promote the use of the link, and provide users with technical support.<http://www.orientplus.eu>  |
| 22 | 295043 | Belarusian State University of Informatics and Radioelectronics Vladimir Labunov | BELERA2012-2013 | Reinforcing carbon nanotubes and photonics research cooperation between the Belarusian State University of Informatics and Radioelectronics and the European Research Area | The overall aim of the BELERA project is to integrate the Belarusian State University of Informatics and Radioelectronics (BSUIR) into ERA by reinforcing BSUIR’s research cooperation capacities and twinning with European research and innovation organisations in the following CNT and photonics related research topics: Magnetic properties of CNT; Emission properties of CNT based cold cathodes; and Nanostructured materials for novel photonic devices. These are research topics highly relevant to the FP7 NMP and FP7 ICT. BSUIR is the leading academic institution in Belarus for research in micro- and nanoelectronics; new perspective materials; beam-technologies and technics; and radio engineering devices and systems. Its researchers have published numerous research papers in international, peer-reviewed journals during the past 5 years (e.g. Journal of Applied Physics). The BELERA project will build upon BSUIR’s existing strengths as a high-quality research institution via twinning and capacity building activities with the following 4 excellent European research and innovation organisations: Institut d’Électronique du Solide et des Systèmes, Bergische Universität Wuppertal, Universidad Politécnica de Valencia – Nanophotonics Technology Centre, and Innoveo Consulting. The capacity building activities will involve knowledge exchange, setting up joint experiments, and training development for BSUIR’s researchers focused on the 3 research topics and the FP7 programme. Also, it will involve mapping and promotion of nanoelectronics and nanophotonics organisations across Belarus, and strategy development to support BSUIR and foundation of the Belarusian Nanoelectronics and Nanophotonics Technology Platform. The BELERA project will be overseen by a steering committee involving the consortium partners plus representatives of the Ministry of Education, State Committee on Science and Technology, National Academy of Sciences, and State Microelectronics Companies Integral and Planar.<http://belera.org>  |
| 23 | 310750 | Institute of Powder Metallurgy, NASOleg Smorygo | TheBarCoDe2013-2015 | Development of multifunctional Thermal Barrier Coatings and modeling tools for high temperature power generation with improved efficiency | This project is focused to considerably advance the efficiency of power generation in gas turbine processes by the development of advanced parts or components of significantly improved performance as well as software products providing optimized process parameters. The aim of this project is the development of materials, methods and models suitable to fabricate, monitor, evaluate and predict the performance and overall energy efficiency of novel thermal barrier coatings for energy generative systems. By the radical improvement of the performance of materials “in service”, by the application of novel thermal barrier coatings, structural design and computational fluid simulations a significant improvement in energy efficiency and cost effectiveness will be achieved.  |
| 24 | 317761 | Institute of Heat and Mass Transfer, NASSergey LevchenkoMinskenergo,Vladimir Volodin | SmartHG2012-2015 | Energy Demand-Aware Open Services for Smart Grid Intelligent Automation | SmartHG will develop economically viable Intelligent Automation Software services gathering real-time data about energy usage from residential homes and exploiting such data for intelligent automation pursuing two main goals: minimise energy usage and cost for each home, support the Distribution Network Operator (DNO) in optimising operation of the grid. SmartHG rests on the following four pillars.First, Internet-based open standard protocols enabling effective communication between: i) home devices (e.g., sensors, smart appliances, local generators, electric vehicles, energy storage) and SmartHG services; ii) SmartHG services and DNO software systems; iii) any pair of SmartHG services. This will enable development of hardware device-independent energy services, possibly on the basis of the services already available.Second, user-aware SmartHG services focusing on residential homes. Such services will measure home energy usage and local generation (e.g., from renewable sources), forecast it and actuate home devices (both loads and generators) in order to minimise the home energy bill and usage (local optimisation) with respect to a given price policy computed to attain global (grid level) optimisation.Third, demand-side aware SmartHG services focusing on the grid. Such services will compute individual (yet fair) price policies for each single home taking into account user preferences while optimizing grid operations. Grid safety for such price policies will be formally verified using model-checking-based techniques. Furthermore, such SmartHG services will increase grid reliability by estimating and controlling (using price policies) voltages and currents in internal unmonitored nodes of the grid.Fourth, SmartHG case studies in Kalundborg and Minsk will enable thorough technical, environmental and economical evaluation of project results.Finally, SmartHG consortium consists of three highly qualified and multidisciplinary clusters comprising: four research institutions focusing on Computer and Electrical Engineering, four Energy Service SMEs, two DNOs and a municipality. The resulting synergies will ensure the success of the project as well as the wide dissemination and the effective exploitation of the project results.<http://smarthg.di.uniroma1.it> |
| 25 | 321525 | Centre for Strategic Research and System Analysis, NAS Natalia Yankevich | ENTIII2012- | ERA NET TRANSPORT III | Since 2004 a comprehensive and powerful network of national ministries and supporting organisations in the field of transport research has been building up ERA-NET TRANSPORT (ENT). The ERA-NET TRANSPORT pre-dominantly serves to the owners and managers of transport research programmes. By facilitating cooperation among publicly financed transport research programmes it is ENT’s goal to improve the outcome and quality of transport research in Europe. The main mechanism is seen in the structuring of the European Research Area (ERA) for Transport. Since its foundation the ERA-NET TRANSPORT has initiated and implemented several activities and is currently defining further, even more advanced measures to make the ERA for Transport become reality. Successful cooperation requires a solid and suitable basis and framework, which will be the subject of coming ENT-driven activities. One of these horizontal future initiatives will be the provision of a database on national transport research programmes and national R&D results. Furthermore the ENT sees a need to encourage and enable less-experienced partners to participate in trans-national cooperation as well as in the European Framework Programme. ENT facilitates this target by supporting these partners in their development of appropriate structures, processes and transport research programmes. The third phase of the project was launched in November 2012 with extended partnership which for the first time included Belarus, <http://www.transport-era.net>.  |
| 26 | 310279 | Powder Metallurgy Institute, NASBAlexandr Ilyushchanka,Andrey Letsko | OXIGEN2013-2017 | Oxide Dispersion Strengthened Materials for the Additive Manufacture of High Temperature Components in Power Generation | OXIGEN will combine leading-edge European expertise in the manufacture of specialist powder alloys (Mechanical Alloying), knowledge of niche high-temperature materials and capabilities in additive manufacturing. This will produce an integrated, world-leading capability to directly manufacture from powder to part custom-designed, best-in-class high temperature alloys for power generation component applications. OXIGEN will develop different (Oxide Dispersion Strengthened (ODS)) alloys individually designed to address specific high temperature materials performance challenges currently limiting power generation component capabilities. This will lead to the prospect of higher efficiency power generation turbine systems. Working within OXIGEN, and with end users (Alstom, Siemens and Ivchenko Progress) with a combined significant global reach and capabilities, it is expected that holistic exploitation of project results can contribute significantly towards achieving sustained high temperature turbine operation (>620 Degrees C) leading towards power plant efficiency gains greater than 30%. To achieve these key objectives, the consortium consists of 11 organisations who are recognised leaders invarious industrial sectors, in the Development of ODS materials and powder production technologies and in the development of LMD and SLM processes. |
| 27 | 324449IAPP | ODO Mikrotestmashinu, Gomel | ALBATROSS | Assembling Langmuir-Blodgett Architectures Through the use of Roll-to-roll Systems | The project addresses each of the three elements of the so-called 'knowledge triangle', i.e. research, innovation and education. The proposed programme is based partly on nationally funded multidisciplinary (Photonics, Nanoelectronics, Chemistry, Materials Science) projects that have been recently awarded to the partners from Academia and is designed to provide added value from the obvious synergies between these projects. The complementarity will enable the consortium to develop novel products using SiO2/TiO2 nanoparticles for improving the properties of solar cells and OLEDs/ OFETs that the first SME partner aims to bring into production.The equipment innovation comes from the planned systematic modifications and improvements to both hardware and software and improvement to both hardware and software of a roll-to-roll Langmuir-Blodgett dipper mechanism that has been developed by the second SME partner.We aim at making the final device attractive for potential customers by modifying the existing prototype so that it is compatible with other equipment (LB troughs) aleady available on the market.The educational and training value of the project is also high in that a number of secondments of research personnel are envisaged, including PhD students.The enhanced commercial opportunities of the device will give the research community direct means of preparing complex photonic and nanoelectronic structures on flexible substrates using a wide range of materials. The innovative roll-to-roll (R2R) mechanism will therefore facilitate the possibility of using the LB technique in a range of new commercially scalable production processes, enabling us to take this technology out of the laboratory and into the factory environment - which will be a truly revolutionary accomplishment and one which is directly aligned with EU requirements. |
| 28 | 320325 | Belarusian State University,Faculty of Philosophy and Social Sciences,Larisa Titarenko | NET4SOCIETY32013-2014 | Trans-national co-operation among National Contact Points for Socio-economic sciences and the Humanities (SSH NCPs | This project supports the activities of SSH NCP network (over 60 NCPs in 2012) to continue activities started within the NET4SOCIETY and NET4SOCIETY2 projects, see above.<http://www.net4society.eu/>  |
| 29 | 911932 | Belarusian State University | NOVOSIP2012-2013 | Nano-Voids in Strained Silicon for Plasmonics | This is a re-integration phase of the IIF project. The project aims at exploring the use of nanovoids and nanodots prepared as plasmonic structures to enhance the efficiency of Si single-crystalline photovoltaic (PV) devices. Fabrication and experimental investigation of plasmonic structures in strained Si/SiGe multilayered structures will be carried to enhance light harvesting in solar cells due to both near-field and far-field effects. The main idea behind the production of nanovoids and nanodots is based on the ability of compressively strained thin SiGe alloy layers, incorporated in a Si matrix during epitaxial growth, to collect small-sized molecules (H, He, C) or vacancies, induced by irradiation. Further, thermal treatment results in the formation of nano-voids which are strictly assembled within the strained SiGe layers. The following key processes will be used: Molecular beam epitaxy of strained Si/SiGe/Si structures followed by irradiation with light ions (hydrogen, carbon) and rapid thermal treatment. This structure will then be additionally used as a template for segregation and self-assembling of metallic or carbon nanodots. The fundamental investigations of the structural, optical and electronic properties of the strained Si/SiGe layers will be carried out with a range of available methods for structural, electronical and optical characterization. By placing the nanovoids and nanodots in a highly doped emitter layer close enough to the p-n-junction that the near-fields will extend into the depletion layer, the effects of near-fields will be obtained. This will give a contribution to the electron-hole pair generation, and this will be additional to the far field effects. Being formed periodically, strained layers with self-assembled nanovoids or nanodots will display fundamentally unusual electronic and optical properties. These effects have not previously been experimentally studied in a solar cell configuration. The present system offers a unique configuration for such investigation. |
| 30 | 605243 | United Institute of Informatics Problems, NASSergey Kozlov | GN3plus2013-2015 | GEANT3plus | GÉANT is the pan-European research and education network that interconnects Europe’s National Research and Education Networks (NRENs). Together we connect over 50 million users at 10,000 institutions across Europe, supporting research in areas such as energy, the environment, space and medicine.**The GÉANT network and associated services comprise the GN3plus project, made up of 41 partners -** 38 European national RENs, DANTE, TERENA and NORDUnet (representing the five Nordic countries). In total, the project represents 43 NRENs from Europe and nations with FP7 third country agreements. Through the NREN partners, GÉANT delivers a range of services across the network for institutions, projects and researchers.The work of the project is divided into 14 Activities within three areas of work: Research; Service Development and Delivery; Outreach and Coordination.* **Networking Activities** (NAs) support all GN3plus Activities with the full extent of both internal and external communications, promotion, international liaison and business development.
* **Service Activities** (SAs) develop and supply the GÉANT services to the research and education community.
* **Joint Research Activities** (JRAs) are targeted at critical analyses of future network and application technologies with a view to future deployment of emerging technologies across the network and services.

<http://www.geant.net> |
| 31 | 609528 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Olga Meerovskaya | IncoNet EaP2013-2016 | STI International Cooperation Network for Eastern Partnership Countries | The project aims to support the advancement of the bi-regional STI policy dialogue between the EU MS/AC and the Eastern Partnership countries, with an explicit focus on the Societal Challenges that have been identified to be of mutual interest for the two regions, namely Climate Change, Energy and Health. In particular the project will identify actions and stakeholders and will implement innovative pilot activities to strengthen the coordination and impact of the individual actions.In terms of policy dialogue, the project will provide analytical evidence and monitoring to feed the dialogue and to support joint agenda setting. Policy mix reviews will be implemented along with capacity building activities with emphasis on the promotion of Innovation. More specifically, links with the EU technology platforms will be established allowing mutual learning and exchange of best practices for enhanced public-private partnerships between the two regions. In addition, support to FP contacts will be provided to strengthen their role and to adapt their functioning to the challenges of H2020.The proposed project will build on the experience of the previous projects (IncoNet EECA and IncoNet CA/SC) targeting the region and will develop synergies with the forthcoming project targeting the Central Asian countries. |
| 32 | 609531 | Belarusian State Agrarian University,Sergey KostiukevichRepublican Center for Technology Transfer,Vitaly Kuzmin | NoGAP2013-2016 | Knowledge transfer community to bridge the gap between-research, innovation and business creation | NoGAP bridges the gap between research and innovation and contributes to taking advantage of the innovation potential of SMEs based on a better cooperation with researchers, transferring and using knowledge resulting from research. The overall objective of the project is to reinforce cooperation with Eastern Partnership countries to develop a “Common Knowledge and Innovation Space” on societal challenge ”secure, clean and efficient energy”.The NoGAP consortium is composed of 13 organizations from 6 countries of which 3 are EU members (Germany, Romania, Slovakia) and 3 are members of the Eastern Partnership (Belarus, Ukraine, Georgia). In order to improve mobility between research, business and innovation, interrelated tandem relations between research organizations and innovation support services are established.Within the NoGAP project we want to:- identify the main drivers and obstacles of closer links between academia and the market in the field of secure, clean and efficient energy in the Eastern Partnership Region- develop a best practice methodology to enhance successful commercialization of research results and to improve the management of these results - develop innovation support services to foster existing and establish new strategic partnerships- assess the opportunities for the establishment of sustainable Technology Transfer Centres (TTC) in the participating partner countries on the basis of existing structures and good practice- improve the competencies of researchers, entrepreneurs and multiplicators by organizing trainings- develop a list of pilot activities to foster mutually beneficial public-private-partnerships between EU and Eastern Partnership countries in the energy sector - create and organize twinnings between the regions- promote networking between EU and Eastern Partnership countries. |
| 33 | 609532 | Belarusian Institute of System Analysis and Information Support of S&T Sphere,Olga MeerovskayaBelarusian Innovation Fund,Anatoly Hryshanovich | ENER2I2013-2016 | ENER2I (ENErgy Research to Innovation): Reinforcing cooperation withENP countries on bridging the gap between energy research and energy innovation | Energy supply and usage and the stimulation of innovation activities are some of the most important challenges for the EU and for the Eastern European countries within the European Neighbourhood Policy (ENP). Increased resource efficiency and innovation in renewable and sustainable energy offers the best potential to solve the urgent, interrelated societal challenges of insecurity over energy supplies, growing energy demand, and looming climate change. The ENER2I project focuses on the need to find innovative and sustainable solutions to these challenges, directly addressing the gap between new energy research and European industry. Existing research results are not being sufficiently transferred into innovative processes and products, and in many countries cooperation among research institutes, universities, and the business sector are at an early stage of development. In order to bridge this gap and accelerate innovation performance, ENER2I will improve knowledge transfer and innovation support in the field of renewable energies and energy efficiency through a comprehensive trans-national cooperation programme. We propose to stimulate the linkages between research and innovation with effective knowledge transfer methods in the ENP countries Armenia, Belarus, Georgia and Moldova, and establish sustainable cooperation between research and innovation actors across EU and ENP countries with support from EU partners from Austria, Germany, Hungary. With a strong consortium of research organisations in the energy and innovation fields, innovation funding agencies, service providers, and SME support agencies, and a mix of proposed activities, including brokerage events and training workshops in each of the ENP partner countries, twinning schemes, and an innovation voucher scheme, we will address the difficult challenge of strengthening cooperation between research and business actors in EE/RES, while at the same time facilitating cooperation between EU and ENP actors. |

1. **Проекты, в которых белорусские организации участвуют без подписания контракта (проекты по обмену персоналом между научными организациями в рамках программы 7РП «Люди», IRSES)**

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| **№** | **Grant Agreement****Number** | **Belarusian Partner** |  | **Proposal Acronym** | **Proposal Title** | **Proposal abstract** |
| 1 | 247007 | Institute of Nuclear Problems,Belarusian State University,Sergey Maksimenko | CACOMEL | Nano-carbon based components and materials for high frequency electronics | A strong expansion of the frequency range towards terahertz and infrared is the major trend in the modern electronics and optoelectronics. It relies on the incorporation of modern nanotechnology that has already given the birth to nanoelectronics, a rapidly developing discipline focused on both the dramatic increase of the component integration level and decrease in a power consumption. Performance of nanoelectronic devices is strongly influenced by quantum effects that often even determine properties of nano-sized components. The project aims at understanding of fundamentals of the electromagnetic processes in nanocircuits, theoretical and experimental investigation of underlying mechanisms responsible for their fascinating properties, and development of physical basis for use of these properties in novel nanoelectronic devices. The project focuses on linear and nonlinear electromagnetic effects in nano-carbon structures, such as onion-like carbon and both single- and multi-wall carbon nanotubes. We will investigate in detail a performance of nanocircuits based on carbon nanotubes and other nanocarbon materials. The multidisciplinary and challenging project relies on the complementary expertise of the consortium teams and is based on the original approach combining electrodynamics of mesoscopic inhomogeneous media and quantum theory of electronic ensembles with reduced dimensionality. <http://cordis.europa.eu/projects/rcn/97087_en.html>  |
| 2 | 247260 | Institute of Physics, NAS | DphotoD | Dendrimers for photonic devices | The goal of this interdisciplinary research project is to develop synthetic methods toward new types of dendrimers with tetrapyrrolic core and (indolo)carbazole dendrons, to reveal and analyse physical and chemical mechanisms of control of the luminescence response of dendrimers, and to create a basis for their resulting applications as molecular photonic devices. Combined efforts of synthetic chemists, spectroscopists and theoreticians from Western and Eastern Europe will be applied to achieve this aim. New types of dendrimers with tetrapyrrolic core possessing promising luminescent features, will be synthesized. Physical and chemical mechanisms of manipulation of their optical response will be revealed and analysed with using diverse spectroscopic approaches including steady-state and transient absorption, luminescence, fluorescence line narrowing, infra-red and Raman spectroscopies, luminescence microscopy and single molecule detection at ambient and low temperatures. The two-photon absorption spectroscopy will be applied for the design of infra-red light harvesting antennae and nonlinear optical devices. Theoretical methods will be applied to obtain the optimized molecular conformation of the dendrimers and to establish the pathways of the migration of excitation energy. The realization of this project will lead to the deeper understanding of fundamental processes of light energy transformation in supramolecular systems, which provides the basis for the design of efficient luminescent sensors and photonic devices that will be available for broad implementation.<http://cordis.europa.eu/projects/rcn/96174_en.html>;  |
| 3 | 247508 | “Scientific and Educational public association “Oracul”. | RECOSET | Research on Cooperative and Social Enterprises in Transition Contexts | RECOSET aims to stimulate the creation of a network among research centres that are committed to studying cooperative and social enterprises in EU/AC and TC. The societal interest in cooperative and social enterprises stems from their capacity to sustain the welfare of individuals and families, to fight social inequalities, and to enhance social cohesion and solidarity behaviours through the production of a wide spectrum of general interest services (ranging from health, social and cultural services to the work integration of disadvantaged workers), heavily affecting the welfare and political systems. Despite the growing number of individual researchers and research centres involved in studies concerning this theme, a general consolidated literature on the matter is still lacking. The lack of uniformity, coupled with a poor understanding of cooperative and social enterprises’ roles in contemporary societies and economies, prevents the enhancement of awareness of policy makers and practitioners on the potential of cooperative and social enterprises and thus jeopardizes the sector’s development. Against the background of overcoming the lack of a common theoretical framework and empirical methodologies in this field, RECOSET promotes the exchange of researchers (both early-stage and experienced). Furthermore, given the goal of establishing a lasting cooperation among the beneficiaries ,the exchange of one staff member from EURICSE specialised in networking activities is promoted. As for Third Country, the main goal is to give researchers the opportunity to benefit from the theoretical and empirical knowledge that has been accumulated so far by the EU/AC research centres involved. Researchers from EU/AC countries will be offered the opportunity to broaden the geographical reach of the studies so far accomplished, by focusing on countries where research on cooperative and social enterprises is still rather scarce.<http://cordis.europa.eu/projects/rcn/96636_en.html>  |
| 4 | 30778 | Institute of Nuclear Problems,Belarusian State University,Sergey Maksimenko | TerACaN | Terahertz applications of carbon-based nanostructures | Creating reliable portable devices working in the terahertz (THz) range of electromagnetic spectrum is one of the most formidable tasks of contemporary applied physics, with nanostructures being at the heart of the most promising proposals. This project aims at elaborating a general approach to the description of electromagnetic processes in various carbon-based nanostructures, investigating their electromagnetic properties, and developing a physical basis for utilizing these properties in novel THz nanodevices. The complementary characters of the two key factors inherent in solid-state nanostructures, the spatial confinement of charge carriers and intrinsic nanoscale inhomogeneity of electromagnetic fields, drastically modify their electronic and optical properties. Whereas the first factor lies in the focus of current research activity of the nanoscience community, the role of the second factor was underestimated before. The proposed research is focused to fill this knowledge gap for carbon-based nanostructures. As a whole, the project contributes to the novel interdisciplinary research field, the nanoelectromagnetics, which represents a synthesis of macroscopic electrodynamics of inhomogeneous media and microscopic theory of electronic properties of nanostructures. We will study carbon nanotubes (CNTs) and graphene representing latest trends in carbon-based nanotechnology. As shown in our proposal, unique physical properties of these nanostructures provide the basis for novel THz applications. To achieve the ambitious goals of this project, the consortium involves scientists from both electromagnetic and nanostructure communities. Intensive transfer of knowledge between them is essential.<http://cordis.europa.eu/projects/rcn/90157_en.html>  |
| 5 | 269167 | Belarusian State University of Informatics and Radio Electronics | PVICOKEST | INTERNATIONAL COOPERATIVE PROGRAMME FOR PHOTOVOLTAIC KESTERITE BASED TECHNOLOGIES | The key objective of this multidisciplinary project is to intensify and consolidate cooperation between research groups from member states and Third countries on topics of synergy in research, innovation, sharing common expertise and technology transfer in the area of photovoltaic, more specifically in Kesterite materials. This project will provide the possibility to the involved research organizations, to reinforce their research cooperation on the long term. They will establish through this joint program, new opportunities for a further exploration of solar cell materials science, which plays nowadays a critical role in the implementation of technologies into area of photovoltaic devices. In this sense, the project aims to investigate absorber materials for thin film solar cells that only contain abundant and non-toxic elements as a contribution to a sustainable energy economy. Currently, earth-abundant copper-zinc-tin-chalcogenide kesterites Cu2ZnSn(Se,S)4, are potential alternatives for the two leading technologies Cu(In,Ga)(S,Se) (CIGS) and CdTe, reaching promising efficiencies over 9.6% . The obtained knowledge of these materials will help to understand their physics and give routes to engineer technologies of growing of structural perfect crystals, films and devices on their base. There is still a large need for an ample scientific study in order to support a future implementation of kesterites in the European industry. This multidisciplinary project comprises research activities in materials science and physics and includes the structural, optical and transport characterization of kesterite films and crystals. Throughout the exchange program the individual expertise available at the partners will be combined to study kesterites that are especially appropriate for use as materials for high-efficient, ecologically lovely and low-cost photovoltaic devices. Finally all ideas/developments will be turned into one device that will find applications in photovoltaics<http://cordis.europa.eu/projects/rcn/98074_en.html>  |
| 6 | 269282 | Belarusian State University,Chemical Faculty | SISET | Enhancing Scanning Ion-Selective Electrode Technique | The SISET joint exchange programme aims to establish long-term research cooperation between Portuguese, Belgian, Belarusian and Chinese scientists in the field of instrumental techniques for corrosion science. Collaboration brings together the experts from conventional and localized electro analytical techniques, electro chemical modeling, corrosion science and protective coatings in order to develop new experimental protocols for studying corrosion and healing processes on a micro scale. The work programme intends to synergistically unite the existing localized electro analytical techniques via realization of new ideas allowing their simultaneous use. Combination of two or even three localized techniques dramatically increases the value of data acquired by each of them since all numerical parameters are collected without considerable time lag and therefore can be unconditionally used as the input parameters for modeling and simulation. For example, SVET-SIET measurements performed simultaneously correlate information about two essential components of corrosion processes: electrochemical oxidation-reduction equilibriums with acid-base chemical interactions, dramatically improving the understanding and prediction of corrosion processes.In view of indicated project objectives, no high financial investment is required since the individual techniques are well developed and the research activities at the partner institutions are already in progress. To achieve the goals, complementary combination of the existing expertise and groundwork is needed. Mutually beneficial transfer of knowledge will be implemented through an intensive exchange program between five partner organizations. <http://cordis.europa.eu/projects/rcn/98127_en.html>  |
| 7 | 269304 | Belarusian State University | PHOTOCONTROL | Design of photocontrollable polyelectrolyte-based nanoengineered container systems | The objective of the project is to provide a joint comprehensive research on the development of light-sensitive active coatings and light-addressable microdispensors based on the incorporated mesoporous photocatalytic particles loaded with active agent (lubricant, biocide, corrosion inhibitor). The coating will include container either with the inorganic scaffold made of photoactive material (TiO2) coated with polyelectrolyte shell or inert scaffold (SiO2) coated with polyelectrolyte/nanoparticles shell where the introduced nanoparticles are sensitive to the external light. The encapsulation employing Layer-by-Layer (LbL) electrostatic adsorption of polyelectrolyte molecules or charged nanoparticles represents novel and very efficient approach to creation of micro-and non-sized container structures with controlled composition and permeability of the shell for protection, delivery and storage. Of principle importance is a fact that the permeability of the polyelectrolyte containers’ walls can be effectively modulated by introduced nanoparticles making it sensitive to the heat, UV or visible light as well as alternating magnetic field.<http://cordis.europa.eu/projects/rcn/98598_en.html>  |
| 8 | 319010 | Institute of Bioorganic Chemistry, NASLilia Nadolnik | U-GENE | Multi-national network of excellence for research on genetic predisposition to cardio-metabolic disorders due to UCP1 gene polymorphisms | Cardio-metabolic disorders (CMD) represent a heavy public health burden for Europe which has one of the highest adult mortality rates in the world, primarily due to a very high incidence of CMD. The 2011 FP7 Health Work Programme included three Calls targeted specifically on understanding CMD nature and pathophysiology, while the World Health Organization Regional Office for Europe recently recognised CMD as the greatest public health challenge of the 21st century. The aim of this proposal is to create a multiannual joint programme of collaboration between eminent research entities based in EU or Associated Countries (EU/AC) and Eastern Europe and Central Asia (EECA) countries for investigating the prevalence of uncoupling protein one genetic polymorphisms and their impact on predisposition to CMD. Thus, U-GENE fits perfectly within the scope of IRSES which aims in establishing long-term research cooperations through coordinated joint programmes of balanced research staff exchanges in thematic areas that are relevant to the European population. In addition, the EECA region is of strategic importance to the EU, in both economic (trade, energy) and political (security, stability) terms. The U-GENE partners boast an outstanding group of researchers, extensive collaboration and knowledge transfer networks, a large number of relevant publications, as well as very active participation in research programs funded by the European Commission. Moreover, the partners’ experience and specialisation in CMD research, their extensive experience in networks of excellence and international collaborations, and their broad infrastructures will provide the level of quality required to transform the U-GENE joint exchange programme into a successful multi-national network of excellence for CMD research. |
| 9 | 295273 | Scientific-Practical Materials Research Centre of the National Academy of Sciences of Belarus | NANEL | Functional ordered NANomaterials via ELectrochemical routes in non-aqueous electrolytes | The NANEL joint exchange project aims to establish long-lasting research cooperation between Portuguese, Bulgarian, Belgian, Belarusian, Russian and Vietnamese scientists in the field of electrochemical synthesis of advanced nanostructured materials. The collaborative consortium joins together a critical mass of the expertise available in the involved groups. The partners bring the complementary experiences and experimental facilities which are essential for effective development and testing of the nanomaterials for to be applied in sensors and photovoltaics. Mutually beneficial transfer of knowledge will be implemented through an intensive exchange program between six partner organizations.The main technical objective of the project is development of novel functional nanomaterials for sensors and solar cell applications on the basis of ordered nanoporous anodic oxides. The main scientific novelty of the project is functionalization of the porous anodic oxides, such as alumina or titania based ones, via electrochemical or electrophoretic ways using non-aqueous electrolytes. Ionic liquids and molten salts will be used as prospective candidates for the electrolytes. The electrochemical synthesis of nanomaterials has several important advantages because of relatively low costs and fine control of the process parameters. The suggested approach will confer creation of new ordered functional nanomaterials via electrochemical routes which are not possible in water-based electrolytes. Use of non-aqueous solution confers significant advantages for specific materials which are not stable in presence of water or can not be electrodeposited because of the relatively narrow electrochemical window of water. |
| 10 | 318617 | Institute of Nuclear Problems,Belarusian State University,Polina Kuzhir | FAEMCAR2012-2016 | Fundamental and Applied Electromagnetics of Nano-Carbons | Owing to very small dimensions of nanostructures in one or more directions, spatialconfinement of charge carriers is fully achieved, providing thereby a discrete spectrum of their energy states. In addition, intrinsic spatial inhomogeneity of nanostructures dictates nanoscale inhomogeneity of the surrounding electromagnetic fields. Therefore, understanding the properties of nanostructures requires to deal with the intricate characters of their atomic structure, electronic structure and electromagnetic environment. Coming within the scope of this new field of "nano-electromagnetics", the present project aims at understanding how and why carbon nanostructures might have interesting electromagnetic properties. The core of the project is the development, the experimental validation and the exploitation of a consistent theory of the electromagnetic response in radio, microwave and THz frequency ranges of regular carbon nanostructures and polymer composites based on nanocarbons. In particular,the project intends:- to provide a forum for scientists specialized in different areas of the nanocarbon, and nanocarbon materials synthesis and applications; - to interpret experimental electromagnetic data collected;- to define physical grounds and to perform experiments for the design of a new generation of ultra-light materials with controlled electromagnetic properties;- to explore the possibility of using chemically-modified nanocarbons in "thin" bio-medical and nanophotonics applications.At this aim, seven teams belonging to three different scientific areas will joint efforts. The partners will equally contribute to the achievements of the objective of this multi-disciplinary project by bringing their expertise in condensed-matter physics, electromagnetic theory, and applied electromagnetism. The research efforts, both theoretical and experimental, are articulated around four work packages all involving strong collaborative links and knowledge transfer across the consortium. |
| 11 | 316730 | Institute of Biophysics and Cell Engineering NAS,Dzmitry Shcharbin | NANOGENE2013-2017 | EU-Belarus-Russia Network in Nanomaterials-Driven Anti-Cancer Gene Therapy | Dendrimers are a new class of nanomaterials. They are monodisperse, stable, and are characterized by relatively low viscosity at high molecular mass and numerous end groups that can be ionized, which means that they can efficiently bind a large amount of genetic material and deliver it to ill organs and tissues (gene therapy). The partners of project from EU countries organized European research network in the field of dendrimers. They collaborate in the frames of EU Framework 7 Programme supported grants and initiatives: COST, MNT ERA NET 2007, ERA NET EuroNanoMed 2010. Belarus and Russia partners started to collaborate in the field of multifunctional dendrimer/carbon nanotubes as gene carriers on the basis of bilateral collaboration grant. Present project is devoted to combining of these two independent networks in oneEU-Belarus-Russia platform in the field of nanomaterials for biomedical applications. The main objective of NANOGENE project is to provide the tight collaboration of five institutions from European Union, Russia and Belarus in the field of nanomaterials-driven delivery of anti-cancer siRNA into cancer cells. The aims to be achieved are: I: Encouragement and promotion of the international collaboration (trainings, promoting and facilitating the international collaboration relevant to FP8); II: International networking and strengthening of the research collaboration (workshops, strengthening the research management and scientific links existing among participating university/academia partners and distribution of best practice in FP8 project administration); III: scientific results realized in the number of papers in peer-reviewed journals and presentation of joint results at conferences. Such international co-operation is important for building linkages between EU countries and Belarus and Russia for creating better relations between institutions which results in more united Europe and for future joint FP8 proposals. |
| 12 | 318874 | V.A. Belyi Metal Polymer Research Institute of National Academy of Sciences of Belarus | INNOPIPES | Innovative nondestructive testing and advanced composite repair of pipelines with volumetric surfaces defects | Pipeline systems have supreme significance for an effective functioning of industry providing Eastern and Western European markets with energy resources: crude oil, natural gas and liquid petroleum products. Taking into account long life of pipeline networks and situation, when over 20% of large-diameter pipelines are with an exhausted lifetime, an important task at the present time becomes an ensuring of reliability for these transport systems.An intensive study shows that among the main reasons of pipeline accidents are the volumetric surface defects (VSD) arising as a result of corrosion or erosion-corrosion processes and by this way considerably decreasing the pipeline strength. In order to ensure efficient and safe operation of existing pipelines, operating companies routinely inspect the pipes. The methods that are used for this purpose, like “smart pig”, are sufficiently expensive, require, in some cases, significant reconstruction and have an insufficient sensitivity. An application of new composite materials for the repair of damaged pipelines considerably improved situation in the last time. However numerous standards associated with this type of repair are based on simplified approaches and do not take into account the stress-strain state in the damaged areas.Strategic objective of the project is addressed to the improvement of infrastructure in EU and Third counties by the rising of reliability of existing pipeline systems. Work over this project will serve IRSES main goal achievement – strengthening research partnerships through short period staff exchanges and networking activities between organisations from EU and Third countries.The scientific and technical objectives are improvement of existing and developing of new methods for detection and repair of VSD based on low-frequency ultrasonic testing with directional waves and advanced composite repair systems to bring efficiency of damaged section up to the level of undamaged pipeline. |
| 13 | 316338 | BELARUSIAN STATE UNIVERSITY | DynSysApll | DYNAMICAL SYSTEMS AND THEIR APPLICATIONS | The main objective of this project is to create fundamental understanding in dynamical systems theory and to apply this theory in formulating and analyzing real world models met especially in Neuroscience, Plasma Physics and Medicine. The specific objectives, tasks and methodology of this proposal are contained in the 5 WPs of the project. In WP1 we want to develop new methods for the center and isochronicity problems for analytic and non-analytic systems, study bifurcations of limit cycles and critical periods, including time-reversible systems with perturbations, and investigate reaction-diffusion and fractional differential equations. In WP2 we deal with the problem of integrability for some differential systems with invariant algebraic curves, classification of cubic systems with a given number of invariant lines, study global attractors of almost periodic dynamical systems and their topological structure, respectively, Levitan/Bohr almost periodic motions of differential/difference equations. The main objective of WP3 is to study dynamics of some classes of continuous and discontinuous vector fields, preserving, respectively, breaking some symmetries, study of their singularities and closed orbits for classes of piecewise linear vector fields. WP4 deals with Hamiltonian systems in Plasma Physics, twist and non-twist area preserving maps, further studies of a recent model proposed to study some phenomena occurring in the process of plasma’s fusion in Tokamaks, numerical methods, and the study of symmetries of certain kinds of k-cosymplectic Hamiltonians. The last WP tackles mathematical models in Neuroscience and Medicine. Firstly, we study several ODE-based and map-based neuronal models, survey in vivo results with respect to Autism Spectrum Disorder (ASD) and propose a model for ASD. Secondly, we study several approaches to mathematical models for diabetes. Finally, bone remodeling by means of convection-diffusion-reaction equations is our last task. |
| 14 | 318520 | Institute of Biophysics and Cell Engineering NAS | BIOSENSORS-AGRICULT | DEVELOPMENT OF NANOTECHNOLOGY BASED BIOSENSORS FOR AGRICULTURE | The key objective of the “DEVELOPMENT OF NANOTECHNOLOGY BASED BIOSENSORS FOR AGRICULTURE” project is the coordinated transfer of knowledge and training activities between participating teams in the EU (Riga, Linkoping, Montpellier), in the Ukraine (Odessa and Kyiv) and the Belarus (Minsk) with the aim of strengthening the existing scientific partnerships and developing new collaboration for long lasting synergy, and to enhance the scientific excellence of participating early stage and experienced researchers. The transfer of knowledge and forming of an intellectual “critical mass” will occur through theoretical exercises and laboratory research in the important and growing field of optical fibre biosensors, aiming towards applications in agriculture and taking opportunities offered by the latest achievements in nanotechnology and biotechnology. The challenge is to create a unique devices for detecting animal diseases, viruses and toxins using fundamental phenomena such as light absorbance, reflectance, transmittance, fluorescence and photoluminescence. The consortia have theoretical and experimental experience and specific skills for making advances in research on biosensors for agriculture applications. The aim is to amplify their knowledge and skills via joint research on specific tasks in work packages and to ensure the transfer of knowledge via seminars, workshops and summer schools and training courses. Through these, the results will be disseminated effectively and interactions will be stimulated amongst experienced researchers and community of young researchers, PhD and MSc students. Mutual research efforts and contacts, including cross-generation interactions, young researchers meetings and appropriate creative environment will grant necessary pre-conditions for sustainability of cooperation among consortia partners after the project is concluded.In total 164 secondment months are planned, 7 summer schools or training courses and 2 conferences. |
| 15 | 318991 | GOMEL CITY Scientific and Educational public association “Oracul” | INT.RE.COOP | International Research Exchange on Cooperatives | Cooperative initiatives are flourishing in a variety of fields, both traditional and non traditional ones. The resilience of cooperatives has been widely acknowledged by policy and opinion makers, as well as international organizations -Year 2012 has been declared the International Year of Cooperatives by the UN- which are increasingly eager to understand if and how cooperatives can have a role in tackling the dramatic consequences of the global crisis and reforming the system that has contributed to generating it. However, in spite of their societal relevance, scarce attention has been paid so far to cooperatives by the social sciences. While isolated "pieces" of theory have been developed, a comprehensive theoretical framework explaining the upsurge of cooperatives; their competitive advantages in given sectors; and their limitations, has not been elaborated so far. The lack of understanding of the potential of cooperatives has severe policy implications in terms of insufficient political recognition and inadequate management modalities. This circumstance is all the more relevant in Third Countries, including post-transition and Latin American countries, where crucial socio-economic problems that could be successfully tackled by cooperatives remain unsolved.Against the background of contributing to developing a comprehensive theoretical framework explaining the rationale of cooperatives, INT.RE.COOP will enlarge the Research Network established by RECOSET. Partners’ diverse research expertises (in economics; development studies; applied economics; sociology; law; management and business administration) and geographic specialization (EU/AC, CIS; North America; Latin America), will ensure that a multidisciplinary and international approach is adopted and comparative analyses across sectors and countries are carried out, given the goal of developing policy recommendations on how to support the growth of cooperatives where they show competitive advantages. |
| 16 | 610875 | Institute of Nuclear Problems,Belarusian State University,Polina Kuzhir | NAmiceMC2014-2017 | Nano-thin and micro-sized carbons: Toward electromagnetic compatibility applications | The remarkable properties of high-surface area carbons, compatible in that with carbon nanotubes, provide a tremendous opportunity for fabrication, even at very low filler concentrations, of composites with outstanding electrical and electromagnetic properties. Due to their multifunctional properties, carbon/polymer composites can be widely used as relatively low weight and ultra-thin effective electric and optical components, as well as electromagnetic (EM) shielding and absorbing coatings. At the same time, ultra-lightweight carbon foams, being highly conductive, are expected to have very high EM shielding ability due to their cellular structure. Moreover, carbon foams have extremely low cost, and demonstrate outstanding thermal insulation / fire resistant and good mechanical properties. Along with polymer/carbon composites and highly conducting porous carbon monoliths, one more very attractive object for investigation its electromagnetic properties is ultrathin carbonaceous film - pyrolytic carbon or a few layer graphene. We expect that they could absorb up to 50% of the incident microwave power despite the fact that their thickness is only a small fraction of the skin depth.The idea of the project is to provide comparative study of EM shielding effectiveness of carbon foams, carbon ultra-thin films and epoxy/carbon composites with low filler concentration in microwave frequency range and to support the experimental data with an adequate theoretical model of materials’ electromagnetics. On the basis of our theoretical simulations and experimental database collected within the project implementation, we intent to contribute into solution of one of the most challenging problem in material science: to develop EM coating through design-oriented-approach. |
| 17 | 612285 | Institute of Nuclear Problems,Belarusian State University,Sergey Maksimenko | CANTOR 2014-2017 | Carbon-nanotube-based terahertz-to-optics rectenna | The efficiency of traditional semiconductor solar cells is subject to a fundamental limitation, known as the Shockley-Queisser recombination limit, and is found to be near 30 per cent. The invention in the early eighties of solar cell rectifying antennas (rectennas) - a combination of an optical antenna and a rectifying diode to efficiently absorb the incident solar radiation and directly convert the ac field across the antenna into the dc power - provides a way to overcome the limitation. The recent rapid technological progress in the design of different nano-dimensional structures gives rise to a new promising possibility in designing nanorectennas. A solar cell will incorporate a large array of such elements, which provide high conversion efficiency and can be produced cheaply in a roll-to-roll process. However, a practical realization of such devices requires precise theoretical modelling and experimental study to provide optimization of the antenna and nanocontact configuration.The project focuses on the physics and theoretical modelling of the nanorectenna performance. The rectification effect comes from the photo-assisted charge carrier tunneling through the nanotube energy gap. For the efficiency enhancement we propose using the coherent effect of the photon dressing of electron-hole pairs. Theoretical modelling will be carried out on the basis of the Landauer- Büttiker formalism extended to the case of photon-dressed electrons. The fundamental thermodynamic limitation of the rectenna efficiency and the prospective applications of the device will be studied. This multidisciplinary and challenging project relies on the complementary expertise of the consortium teams and is based on an original approach - nanoelectromagnetics – combining the electrodynamics of mesoscopic inhomogeneous media and quantum transport theory of charge carriers in structures with reduced dimensionality. |
| 18 | 612593 | A.V.Luikov Heat and Mass Transfer Institute,NAS,Andrei Khudoley | IMBeing2014-2016 | Towards Intelligent Micro-Bearings – Tribological Aspects | This proposal intends to deliver a basement for networking, staff exchanging and joint seminars and workshop between partners, who all deal with the problem of tribology aspects of micro-bearings including friction and lubrication of micropairs and friction of micro-joints in conical, spherical, cylindrical, parabolic and hyperbolical micro-bearings. The aim is shaping a focus group for further cooperation and joint scientific researches in the mentioned field.Microbearings are used today in different fields: bioengineering and biotechnology, industrial Micro Elements and Micro Systems (MEMS), Micro Power Units (MPU) and Micro Engines (ME), control systems and actuators and many others. Moreover, there are numerous analogies between bio-bearings (for example knees) and micro-bearings in their hydrodynamic behavior, lubrication processes and tribological aspects.Development of nanoscience and application of nanotechnology enabled the researchers to understand these properties better and deeper. However, still there are many unanswered questions regarding behavior and properties of these contact surfaces. More important is, of course, control of these features by an active method, as these physical parts are very small with very low time constants and conventional control systems are not able to satisfy the requirements like stability and quality of their response.The program includes staffs exchanging between partners from EU and TC based on an almost equal scheme, joint seminars and workshops, as well as final presentations for each period of Exchange. |