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Alexander von Humboldt
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“Humboldt Kolleg”
Regional conference by Humboldtians for
Humboldtians

100TH ANNIVERSARY OF THE
DISCOVERY OF
SUPERCONDUCTIVITY



International Year of
CHEMISTRY
2011

MARIA
SKŁODOWSKA CURIE INTERNATIONAL
YEAR

NANO-2011

Cooperation and Networking of Universities and Research Institutes – "study by doing research"

6 – 9 October 2011, Kishinev, Moldova

Program of the Kolleg:

Thursday, 6.10.2011

- 8:00-13:00 Arrival of participants
(shuttle-bus transfer from “Airport-Chisinau”, accommodation in Hotels “Dacia”, “Cosmos”)
- 12:00-17:00 Registration at the reception desk of Hotels “Dacia”, “Cosmos”
- 1. Opening of the Kolleg in the Academy of Sciences of Moldova**
(ASM, Bul.Stefan cel Mare, 1, main hall – Sala Azurie)
- 15:00-15:30 Welcome addresses of President of the Academy of sciences **Acad. Gheorghe Duca**,
Ambassador of BRD **Dr. Berthold Johannes**, Minister of Education of Moldova,
Representant of the A.v.Humboldt Foundation **Dr. Gisela Janetzke**, Director of the
Humboldt Kolleg, **Prof. Anatolie Sidorenko**.
- 15:30-16:00 **Boguslaw Buszewski**. Maria Curie.
- 16:00–16:30 **Ashok Vaseashta**: *International Clean Water Institute – Mission, outreach, and Cooperation*
- 16:30–16:50 **Tatiana Ilarionova**. *Scientific community - virtual unions aimed to collaboration*
- 16:50-17:10 Oxford-Instruments presentation (p.p.t.)*
- 17:00-17:30 Coffee-break
- 17:30-19:00 Working meeting “*Coordination of bilateral contacts and collaboration in research
Programs*” of President of the Academy of Sciences of Moldova, **Acad. Gheorghe Duca**, Minister of
Education of Moldova, rectors of Medical University, State University, Technical University, University of
Academy of Sciences of Moldova with representatives of Alexander von Humboldt Foundation, DAAD, Russian
Academy of Sciences **Acad. Alexander Andreev**, representatives of German Research centres and Universities
– Director of Institute of Nanotechnology KIT **Prof. Horst Hahn**, Director IAP Karlsruhe **Prof. Thomas
Schimmel**, Coordinator of German-Russian Postgraduate College **Prof. Vitaly Gorokhov**, Director of
“Advalytics” **Prof. Achim Wixforth**, Director of Walter-Meissner Institute **Prof. Rudolf Gross**, Director of the
Research Center “*Hochfeld-Magnetlabor Dresden*” **Prof. Jochen Wosnitza**, Director of Institute of Physics,
Humboldt University Berlin **Prof. Fritz Henneberger**, Director of the US-State Department Research Institute,
Prof. Ashok Vaseashta, Director of the Institute for Theoretical Computer Science of the Romanian Academy
of Sciences, **Prof. Horia-Nicolai Teodorescu**, Director of Dep. MMUT and of the Research Center of
University *POLITEHNICA* Timisoara **Prof. Ioana IONEL**, President of the European Chemical Society, **Prof.
Boguslaw Buszewski**, **Prof. Yukio Tanaka**, Department of Applied Physics, Nagoya University.
- 19:30– 21:00** Welcome party.

**Symposium NANO-2011 Cooperation in natural sciences. Devoted to:
100TH ANNIVERSARY OF THE DISCOVERY OF SUPERCONDUCTIVITY
Friday, 7.10.2011**

9:00-18:30 Section 1. SM-2011 Workshop.

(Biblioteca ASM "A.Lupan", str. Academiei 5, conference hall 2nd floor)

Session 1 **Superconductivity/quantum computing** (Chairman A. Sidorenko)

9:00-9:30 Rudolf Gross. *Superconducting Quantum Circuits.*

9:30-10:00 Valerii Koshelets. *Superconducting Integrated Receivers - Recent Developments and Applications.*

10:00-10:30 Leonid Kuzmin "TEB vs. CEB" - Thermo-Electric Bolometer versus Cold-Electron Bolometer.

10:30-11:00 Valerii Ryazanov. *Physics and applications of superconducting phase inverters based on superconductor-ferromagnet-superconductor Josephson junctions.*

11:00-11:20 Coffee-break

Session 2 **Superconductivity** (Chairman M. Kupriyanov)

11:20-11:50 Alexander Andreev. *Electron reflection from N-S boundary (physics and history).*

11:50-12:20 Lenar Tagirov. *Nonuniform superconductivity in SF layered hybrids.*

12:20-12:40 Kostya Arutiunov. *Coulomb effects in superconducting nanowires*

12:40-13:00 Mikhail Kupriyanov. *Spin-valves based on S-FN-S and S-FF-S nanostructures*

13:00-14:00 Lunch

Session 3 **General SF** (Chairman A. Zaikin)

14:00-14:25 Wolfgang Belzig. *The boundary conditions for diffusive superconductor-ferromagnet heterostructures.*

14:25-14:50 Detlef Beckmann. *Interface transparency in S/F layered structures.*

14:50-15:15 Anatoli Sidorenko. *Superconducting spin-switch.*

15:15-15:40 Carmine Attanasio. *Spin-triplet superconductivity in Nb/Py/Nb trilayers.*

15:40-16:05 Alexei Ustinov. *Scaling-up architectures for superconducting quantum circuits*

16:05-16:25 Coffee break

Session 4 **SF-triplet** (Chairman R. Gross)

16:25-16:50 Andrei Zaikin. *Triples superconductivity in a ferromagnetic vortex.*

16:50-17:15 Yakov Fominov. *Odd-frequency-diamagnetic vs. odd-frequency-paramagnetic superconductivity.*

17:15-17:40 Yasuhiro Asano. *Anomalous surface impedance due to odd-frequency Cooper pairs.*

17:40-18:05 Alexander Golubov. *Odd-frequency pairing at surfaces of p-wave superconductors.*

18:05-18:30 Alexei Koshelev. *Anomalous proximity effect between s and s+- superconductors.*

14:00-19:00 Poster session. Presentations of young researchers. *Oxford-Instruments presentation (stand)*

(Biblioteca ASM "A.Lupan", str. Academiei 5, foie)

Chairmen – Prof.Dr. E.Sava, Prof.Dr. Yu.Naydiuk, Prof. Dr. V.Tishkov

Selection of the best young researcher contributions.

19:30-22:30 Conference Dinner. Restaurant "Equator"

Section 2. Cooperation in chemical and biological sciences

[MARIA SKŁODOWSKA CURIE INTERNATIONAL YEAR]

(University of ASM, Academiei 3/3)

Chairmen – Prof. M.Duca, Prof. B. Buszewski

9:00-9:20 **Maria Duca.** *Masterate, doctorate and postdoctorate - "study by doing research" in the University of Academy of Sciences of Moldova.*

9:20-9:40 **Vladimir Tishkov** *Biotechnology in Russia: Science, Innovations and International Cooperation*

9:40-10:00 **Veaceslav Kulciti** *Biomimetical approaches in the synthesis of complex natural products.*

10:00-10:30 **Vladimir Arion.** *Metal Complexes of Indolo[3,2-d]benzazepines and Indolo[3,2-c]quinolines as Potential Antitumor Drugs*

- 10:30-11:00 Coffee-break
- 11:00-11:30 Denis Prodius.** Design of new 3d-4f single molecule magnets: current experience and perspectives.
- 11:30-11:50 Leonid Boshkov** *Theoretical background and experimental realization of effective heat pumps.*
- 11:50-12:10 Victor Vovc.** *Collaboration with LMU-Munich in biophysics.*
- 12:10-12:45 Ludmila Sidorenko.** Heart rate variability influenced by hyperventilation and evoked psychoemotional states.
- 12:45-13:00 Igor Denysenko.** *AvH-Institutspartnerschaft Projects with Germany and the mutual Intellectual property obtained.*

13:00-14:30 Lunch

Section 3. Cooperation in environmental protection

(Biblioteca ASM "A.Lupan", str. Academiei 5, big hall)

Chairmen – Prof. Gheorghe Duca, Prof. Ashok Vaseashta

- 9:00-13:00 **Session: *Water treatment problems and detection of contaminations in water.***
- 9:00-9:30 Gheorghe Duca. The National Program "Clean Water" in the Republic of Moldova.
- 9:30-9:50 Ashok Vaseashta. Water: Technological Innovations Supporting Safety, Security, and Sustainability.
- 9:50-10:10 Vladimir Abramov. Development of new high-efficiency methods of water and soil purification from consequences of technogenic catastrophes and terrorist acts.
- 10:10-10:30 Olga Covaleva. Intensified Photo-and Biodegradation Processes for Benzothiazoles Removal From Water Compartments.
- 10:30-11:00 **Coffee-break**
- 11:00 – 11:20 Diana Porubin. Advance In Galvano-Chemical Technology For Waste Water Treatment.
- 11:20-11:40 Andrei Bologa. Nanoparticles in Environmental and Health Effects.
- 11:40 – 12:00 Carolina Constantin. Physico-chemical methods for establishment of the mechanism of flotation
- 12:00 -12:20 Anikeev Andrey. A neutron source based on gas dynamic trap for transmutation of radioactive wastes.
- 12:20 -12:40 Efim Zasavitsky. Ice-forming characteristics of full-size generators in dynamic conditions.
- 12:40-13:00 Galina Pozina. GaN nanotubes grown by halide vapour phase epitaxy.

13:00-14:30 Lunch

14:30 – 18:30 Session: *Detection of chemicals, biological and pharmaceutical contaminations*

- 14:30-15:00 Fokion Vosniakos Investigation of Natural Radioactivity Concentration in Building Materials and the Impact to Human Health.
- 15:00 – 15:30 Horia-Nicolai Teodorescu. Modelling of Tribo- and Piezo-Nanosensors.
- 15:30- 16:00 Mariana Golumbeanu. Balkan Environmental Association - developing a research network for Balkan and Black Sea region.
- 16:00-16:30 **Coffee-break**
- 16:30-17:00 Ioana Ionel. Success stories concerning UPT cooperation programs in the field of renewable energy and environmental protection areas.
- 17:00- 17:30 Francisc Popescu. Best practice and research on Air Quality Monitoring at "Politehnica" University of Timisoara. Reference and developing monitoring techniques.
- 17:30-18:00 Maria Tomoaia-Cotisel. Biocomposites formed by nano hydroxyapatite, its various substitutes and different polymers and their applications.
- 18:00-18:15 Klaus Schafner. Chisinau 2050 - Weather Manipulation Station .
- 18:15-18:30 Alexandru Cecal . Hydrogen output from nuclear facilities.

18:30-19:00 Round-Table discussion on actual environmental problems. Moderator: A.Vaseashta, F. Vosniakos.

Saturday, 8.10.2011

9:00-13:00 Section 4. Material physics. Nanomaterials

(Biblioteca ASM "A.Lupan", str. Academiei 5, big hall)

Chairmen – **Prof. H.Hahn, Prof. A.Sidorenko**

- 9:00-9:30 Plenary lecture **Horst Hahn** *Nanomaterials in energy and electronics – the proper way to the global modernization.*
- 9:30-9:50** **Sergei Nikitov.** *Functional metamaterials.*
- 9:50-10:10** **Peter Kratzer.** *First-principles calculations of atomic processes in GaAs nanowire growth.*
- 10:10-10:30** **Ahim Wixforth.** *The perfect wave (surface waves in nanoscience)*
- 10:30-10:50** **Jan Frank.** *Development of (Cd,Zn)Te X-ray and gamma ray radiation detectors for medical and security applications*
- 10:50-11:10 Coffee-break
- 11:10-11:30** **Valeriu Kantser.** *Topological insulators and new approaches for material nanostructuring.*
- 11:30-11:50** **Anne Powell.** *Coordination chemistry approaches to nanostructured materials.*
- 11:50-12:10** **Thomas Koch.** *SEM Supported Nanomanipulation of Particles.*
- 12:10-12:30 **George E. Kostakis.** **Peculiar ideas in Coordination Chemistry : Intellectual Topological Aspects.**
- 12:30-12:50** **Vasile Tronciu.** *High power lasers for modern technologies.*
- 13:00-14:30** Lunch
- 14:30-15:00** **Boris Straumal.** *Stuttgart-Karlsruhe-Moscow cooperation in nanotechnology: Nanograined materials- magnetic grain boundary foam.*
- 15:00-15:20** **Tomas Schimmel.** *Functional Nanostructures: From the Salvinia Effect to the Single-Atom Transistor.*
- 15:20-15:30** **Ryzhkov, Sergei.** *Helium-3: alternative magnetic systems for nuclear fusion and perspective energetic applications.*
- 15:30-15:50 Naydiuk Yurii.
- 15:50-16:10 Popa Vyacheslav
- 9:00-18:00 *Oxford-Instruments presentation (stand)*
- 16:10-16:30 Coffee-break
- 16:30-16:50 Goncharenko Igor. *Optical switch on the base of slot waveguide with LC filling.*
- 16:50-17:10

11:00-18:10 Section 1. SM-2011 Workshop.

(Biblioteca ASM "A.Lupan", str. Academiei 5, conference hall 2nd floor)

Session 5 **Superconductivity, triplet SF** (Chairman C. Attanasio)

- 11:00-11:30 Yukio Tanaka. *Theory of topological spincurrent in noncentrosymmetric superconductors.*
- 11:30-11:55 Natalia Pugach. *Josephson Effect in SIFS Junctions at Arbitrary Scattering .*
- 11:55-12:20 Yuki Fuseya. *Odd-frequency superconductivity mediated by critical spin fluctuations.*
- 12:20-12:45 Shiro Kawabata. *Atomic scale 0- π transition and pairing symmetry in a Josephson junction with a ferromagnetic insulator.*

13:10 -14:00 Lunch

Session 6 **Superconductivity, triplet SF** (Chairman Yu.Tanaka)

- 14:00-14:30 Vladimir Fomin. *Dynamics of Vortices in Planar and Tubular Microstructured Superconductors*
- 14:30-15:00 Mario Cuoco. *Odd-in-time triplet pairing in unconventional superconductors*
- 15:00-15:30 Satoshi Kashiwaya.
- 15:30-16:00 Petrea Badica. *Processing of superconductors by unconventional approaches.*

16:00-16:30 Coffee-break

Session 7 **Superconductivity** (Chairman L.Tagirov)

- 16:30-16:55 Jochen Wosnitza. *Evidence for a novel superconducting state in layered organic superconductors at high magnetic fields.*
- 16:55-17:20 Lucian Miu. *Magnetic properties of YBCO films with BZO nanorods.*
- 17:20-17:45 Igor Lukyanchuk. *Superconductors between type I and II: old and new materials.*
- 17:45-18:10 Leonid Prischepa. *Proximity Effect Parameters of Superconductor Based Heterostructures.*

15:00-19:00 Poster Session

17:30-19:00 Round-table discussions “Networking of Collaboration” (ASM, Bul.Stefan cel Mare 1, small hall)

9:00-10:30 **Section 5. Cooperation in German Language Education**
(Conference Hall in the National Historical Museum of Moldova, str.31 August)

Chairmen – Prof. Miklós Kengyel, Prof. Eugen Sava

9:00-9:30 Miklós Kengyel *Die Rolle der Andrásy Deutschsprachige Universität (Budapest) in der Donauregion.*

9:30-9:50 Prof. Dr. Speranta Stanescu. *Deutsch in Rumanischen Schulen heute.*

9:50-10:10 Pavel Donec. *Kulturelle Matrix und Bildungssystem.*

10:10-10:30 Margirita Balmaceda. *A Marie Curie Professorial-level IIF Grant - perfect next step in Humboldt alumni development.*

10:30-10:45 Svetlana Sidorenko. *Cooperation between the State Medical and Pharmaceutical University “N. Testemitanu” Moldova and DAAD.*

10:45-11:00 Coffee-break

Section 6. Social, Juridical, Economical and Philosophical Sciences

11:00-11:20 Tatiana Nikitina. *Modern trends in the institutional investing in Russia and Germany.*

11:20-11:40 Ana Pascaru *Nanotechnoscience in the knowledge society*

11:40-12:00 Ion Guceac. *Constitutional support of the scientific creativity.*

12:00-12:20 Gheorghe Avornic. *Juridical expertise – trends, novel aspects and perspectives.*

12:20-12:40 Ana Avornic. *Estimation of the scientific production costs and their monitoring in the research institute.*

12:40-13:10 Sergey Volchenkov. *Russian business-mentality: evolution from the state of 90-th to the modern one.*

13:10-14:00 Lunch

14:30-16:00 a) for participants: City tour, visiting of the historical and cultural sites of Kishinev
b) for Humboldt-Clubs: Working meeting of presidents and representatives of Humboldt-Clubs of Moldova, Hungary, Czech Republic, Romania, Russia, Ukraine, Belarus, Poland with the representative of the AvHumboldt foundation. Discussion of the problems of collaboration and motivation of young researchers for applications.

Sunday, 09.10.2011

9:00-11:10 **Section 1. SM-2011 Workshop.**

Session 8 **Superconductivity** (Chairman A. Golubov)
(Hotel “DACIA”, str. 31 August, conference hall 2nd floor)

9:00-9:30 Alexei Kavokin. *Exciton-mediated superconductivity.*

9:30-9:50 Mihail Croitoru. *Quantum confinement driven drop of the Bardeen-Cooper-Schrieffer coherence length in nanoscale superconductors .*

9:50-10:10 Vladimir Zdravkov. *Non-homogeneous superconductivity in bilayer and trilayer ferromagnet-superconductor $Cu_{41}Ni_{59}$ - Nb spin-switch core structures.*

10:10-10:30 Ali Gencer

11:00 – 17:00 Special Session - Studienreise along the river Nistru (Dnestr) on the boat, Etno-Restaurant on the board.
