QUESTIONNAIRE

Please, fill in the Questionnaire and return it to contact person in Moldova:

depintrel@asm.md. Phone: 272254

(*) – mandatory fields

	Details about organisation
* **Organisation name**	Institute of Electronic Engineering and Industrial Technologies, Academy of Science of Moldova
Organisation acronym	IEEIT, ASM
* **Organisation Activity** Type (**RES** - Research, **HE** - University, **SME** - Small and Medium Enterprise, **IND** - Industry, **OTH** - Other)	RES
* **Keywords of main research areas**	Bismuth, nanowires, thermo-efficiency, spintronics, magnetoresistance
* **Head of organisation (first name, family name)**	Dumitru Gitsu
* **Post code**	MD-2028
* **Country**	Republic of Moldova
* **City**	Kishinev
* **Street, House**	Academy street, 3/3
* **Telephone (+ country & city codes)**	+373 22 737092
* **Fax (+ country & city codes)**	+373 22 738116
* **E-mail**	d.gitsu@iieti.asm.md

* **Description of organisation and its research achievements for the last five years (~ 5000 signs)**
Technology for fabrication of nanostructures on the basis of semimetals in the form of nanowires, nano- and microcontacts, quasi-one-dimensional structures in glass isolation was elaborated. Liquid phase casting and laser local heating methods were used. For the first time, bismuth nanowires with diameters up to 50 nm were obtained, whereon a number of essentially new effects were found, among them: 1. effect of quantum interference (Aharonov-Bohm effect) shown in equidistant oscillations of the magnetoresistance in direct magnetic field with the flux period hc/2e, with a phase shift being interpreted as manifestation of the Berry phase; 2. sign inversion of the thermopower α and formation of the positive polarity maximum on the temperature dependence $\alpha(T)$ significantly depending on wire diameter d; 3. appearance of the "negative" magnetoresistance effect in perpendicular (with respect to the wire axis) magnetic field in wires with d<70 nm; 4. anomalous deformation dependence of the resistance at elastic stretch of thin wires at 4.2 K. All the above mentioned effects are interpreted in terms of the quantization effect manifestation in Bi wires, where the de Broglie wavelength λ is comparable and becomes less than the wire diameter d.

	Contact Information
* **Contact person (first name, family name)**	Albina Nikolaeva
* **Department / Laboratory**	Laboratory of Physics and Electronics of Semimetal
* **Position**	Chief of the laboratory
* **Qualification and research experience**	Doctor habilitat of Science, Condensed Matter Physics
* **Post address (house, street, city, code, country)**	3/3 Academy street, Kishinev city, MD-2028, Moldova
* **Telephone (+ country & city codes)**	+373 22 738116
* **Fax (+ country & city codes)**	+373 22 738116
* **E-mail**	A.Nikolaeva@lises.asm.md

International co-operation / Participation in EU RTD programmes or other bilateral / multilateral actions INTAS, TACIS, TEMPUS, COST, EUREKA, other RTD programmes (please specify programme/s, project title/s and year/s
1. INTAS project # 94-3562 "Superconductivity on mesoscopic scale" (1996-1998). **2. CRDF/MRDA, BGP project #** MP2-3019 "Synthesis of nanostructures based on Bi and Bi-Sb and the investigation of the electronic transport over a wide range of temperatures, magnetic field and deformations." (2001-2003). 3. **Grant Assistance Project (NFS Award: DMR 0072847)** „High-Magnetic Field Electronic Transport and Thermoelectric Effects inn Bismuth Quantum wire Arrays and Networks" 2004. 4. **CRDF project CGP #** MO-E1-2603-SI-04 "Thermoelectric and Aharonov Bohm oscillations in Bi and its alloys quantum wires." (2004-2006).

	* **Please, use "X" to indicate the scientific area/s of your potential project**
CHEMISTRY	
SOCIAL AND HUMAN SCIENCES	
ECONOMIC SCIENCES	
ENGINEERING SCIENCE	
ENVIRONMENT	
AGRICULTURE AND FOOD	
HEALTH	
MATHEMATICS	
INFORMATION SCIENCE	
PHYSICS	X
NANOTECHNOLOGIES	X
ENERGY	
TRANSPORT	
SPACE	

* **Summary of potential research project envisaged hosting of European researcher for the period of between 1 and 2 years**
Investigation of the quantum interferential effects in the semimetal nanostructures. Study of the thermoelectric and magnetothermoelectric properties of low dimensional structures under electronic topological transition, induced by anisotropic elastic deformation.

	Please, confirm your agreement on data publication and dissemination
I agree with the publication of the data on the web-site **http://www.inco-eeca.net**, and **dissemination** among Mobility National Contact Points of the EU MS and AC **(YES / NO)**	YES
Date	13/06/2008