SEE- Award *(name "Herman Potočnik – Noordung Award" proposed by MHEST)* for Research Infrastructure Donations within the Framework of RTDI Collaboration with West Balkan Countries

Research Infrastructure needs
- Application form for Scientific & Research Institutions from West Balkan Countries

Section A – General information
A.1 Contact details
Name of applicant /(institution) Dr Momir Milosavljević/VINČA Institute of Nuclear Sciences, Atomic Physics Laboratory
Legal status / Type of organisation: Scientific research institution, founded by the Serbian Government
Address (Street name, ZIP code, town): M.P.Alasa 12-14, POBox 522, 11001 Belgrade, Serbia
Telephone no.: +381-11-2455 451 Fax no.: +381-11-3440 100 e-mail: web address/url: www.vin.bg.ac.yu
represented by (name of person legally responsible) Dr Jovan Nedeljković, Director of the VINČA Institute
Name of the contact person Dr Momir Milosavljević
Address (if different from address stated above) Telephone no.: +381-11-2455 452 Fax no.: e-mail: momirm@vin.bg.ac.yu web address/url:
A.2 Applicant (Institution) profile (half page A4) The Vinca Institute of Nuclear Sciences is the largest scientific institute in the Republic of Serbia. The Institute incorporates two nuclear reactors, one cyclotron accelerator installation, one industrial scale irradiation unit, sixteen research laboratories, two research centers, a library, administration, and all the necessary technical services. Founded in January, 1948 as the Institute for Physics it quickly attracted the attention of young talented university graduates of almost all fields of the natural and engineering sciences. As it grew, its research activities diversified, and by 1953 it had already become a recognized nuclear sciences research center. Its name underwent changes from: the Institute for Physics, to the Institute for the Investigation of the Structure of Matter (1950), to the "Boris Kidrich" Institute of Nuclear Sciences (1953), to arrive to its present name in January, 1992. In the late sixties the Government, mainly for economic reasons, decided to make significant cuts in the national nuclear program. As a result, a number of the Institute's research activities had to be replaced by research and development programs associated with the country's industrial development. During the two subsequent decades the research profile of the Institute has been changing in favour of non-nuclear problems. The main research activities in the Atomic Physics Laboratory are in the fields of thin film deposition and characterization, ion implantation and ion beam modification of material, surface and plasma physics. The laboratory is equipped with a number of thin film deposition systems for evaporation and sputtering, a 500 kV research ion implanter, a low energy ion accelerator for surface science, and a number of analytical instruments. A very important aspect of the activities are micro-structural studies of materials by electron microscopy. Available equipment at the moment includes Philips EM 400 T transmission electron microscope, Jeol 35 scanning electron microscope with electron microprobe, and NanoScope atomic and magnetic force microscope. Laboratory staff includes 6 research professors and 25 researchers in the rank of post-docs, PhD or MSc students.

Section B – Description of the research infrastructure requirements/needs
B.1 Please list your research infrastructure requirements – the most urgent equipment you would need. Transmission electron microscope (TEM) in good working condition, in the class of Philips CM 12 or higher, and equipped with Energy Dispersive Spectrometer (EDS). Alternative is a complete set up of Energy Dispersive Spectrometer (EDS), ready to be mounted on Philips EM 400T transmission electron microscope, already existing in the Laboratory.
B.2 Describe the relevance of the requested research infrastructure for the work of your institution and the potential impact of receiving the items listed above (B.1). An upgrade of the existing TEM equipment in the Laboratory would provide numerous advantages in the current and future research programs. A microscope of the class Philips CM 12 or higher would provide better resolution for the analysis of micro and nano-structure of materials, especially if we can achieve the regime of high-resolution TEM. Also, the technique of Energy Dispersive Electron Spectrometry (EDS) would provide a possibility to study the chemical composition of the samples, which offers an additional advantage to sample imaging and electron diffraction analysis. The EDS equipment is now days standard in modern TEMs or HRTEMs.
B.3 Please indicate the potential users of the requested equipment. Potential users include those that already use the services of the existing TEM in the Lab. These are a number of Laboratories in the VINČA Institute, working in various fields of synthesis of micro and nano-structured materials, and in biology, as well as the other users from Belgrade University and the Universities from Novi Sad and Niš. We also have an intensive international collaboration, which includes joint research and publications with the University of Surrey in UK, Goettingen University in Germany, and from the neighbouring countries with the Institute Jožef Stefan in Slovenia and BAS from Sofia, Bulgaria. An upgraded TEM facility would widen the interests of new potential users and enable a higher level of international collaboration.
B.4 Please describe the training needs of your institution related to the requested equipment The Atomic Physics Laboratory in the VINČA Institute has a trained staff to operate the existing TEM, who could easily work on a higher class instrument. Also, we have staff who has worked on HRTEM and EDS equipment while visiting the Laboratories abroad. One of such staff is the applicant in this proposal, who worked for 3 years on a Philips CM 200 microscope with EDS at the University of Surrey. However, if the donator wishes to provide some training, it would be very welcome.
B.5 Please indicate if there is assistance needed with regard to the transportation and maintenance related to the requested equipment Assistance would be needed from the donator in the home institution, if the equipment will have to be dismantled and prepared for shipping to Serbia. We are ready to send our staff to do the dismantling and packing, as well as the installation of the equipment in our Laboratory. Assistance in maintenance would not be necessary in principle.
B.6 Additional Comments A high resolution transmission microscope (HRTEM), or a TEM with EDS facility is currently not available in any research institution in Serbia. Installation of such facility would open new interests and new fields of research in the reagion. In our Laboratory we have experience in transporting and installing used equipment, and all such facilities are currently in full operation.

Please fill in and return the form by email to the contact person in your country (Suzana.vojinovic@mntr.sr.gov.yu)

Place, date: **18 Oct 2007.**

M. Milosavljević

Signature and Stamp of applicant