Project of International Science-Education Center and Integration Problems of Nano Science Education in Far Eastern Region of Asia

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Abstract. Some conception of international science-education center on nano science in Vladivostok is presented. The conception is based on internal and external prerequisites. Internal one is high intellectual potential of institutes of Russian Academy of Sciences and universities of Vladivostok and external one is need of countries of Far Eastern region of Asia in high level manpower. The conception takes into account a specific distribution of science and education potential between Russian Academy of Sciences and Russian universities and a specific their dislocation in Vladivostok. First specific dictates some similarity of organization structure and function of international science-education center to typical science-education center in Russia. But as for dislocation of the international science-education center in Vladivostok, it should be near dislocation of institutes of Far Eastern Brunch of Russian Academy of Sciences in Vladivostok, which are dislocated very compactly in suburb zone of Vladivostok.

1. Introduction
Great advance in information technologies, electronics and nanotechnologies at last ten years present new demands to education. To answer these demands the integration of science and education is needed. An international science-education centre (ISEC) can be used as form of the integration. The ISEC on nano science in Vladivostok is of great importance for international exchange between students of different countries in Far Eastern region of Asia (FERA) and for scientific and education cooperation between these countries. Russian universities and Russian Academy of Science (RAS) have some experience in the integration and there are several science-education centers (SEC) at the universities or institutes of RAS in Russia. But international vector of activity produces determine demands and ISEC shell have own specific organisation and functions, which are dictated by specific goals of ISEC. Aims of ISEC are: 1) training of high level manpower of FERA countries; 2) export of education on informatics, electronics and nanosciences in FERA countries and 3) elite education on informatics, electronics and nanosciences for Russian universities, science institutes and business. In the work we present some conception of ISEC in Vladivostok, which is based on goals of the ISEC and analysis of problems of integration of science and education in framework of Vladivostok ISEC and which takes in to account geographic location of Vladivostok and its institutes.
2. Conception of ISEC in Vladivostok

Vladivostok is a good place for the ISEC. Reasons of this are as follows: 1) high level of teaching in nano science can be provided by several institutes of Far Eastern Branch of RAS, which are mainly concentrated in Vladivostok (Institutes of Marine Biology, Automation and Control Processes, Chemistry, Geology, Soil Biology; Oceanology, Geograph and Bio-Organic Chemistry); 2) Vladivostok has several universities, which have good education basis, infrastructure and management potential for science-education activity in the framework of the ISEC; 3) Vladivostok has good geographic position relatively to the FERA countries and, especially, to China; 4) science-education activity in the range of nano industry is most suitable way for development of Russian intellectual potential; 5) Vladivostok is good bridge between Europe and FERA countries for the international student mobility since Russia is one of European countries.

Main idea of ISEC is joining science manpower, laboratory base and material-technical resources of Vladivostok Universities and Institutes of Russian Academy of Science with open participation of education, science and science-capacious business of FERA countries. As for purposes of elite education, the ISEC is very close to the national universities but there are differences which are dictated, in particular, by the needs of the international labor market and knowledge of the languages of the international relations. In addition, the ISEC differs in the means of achievement of goals including specific kinds of integration with foreign partners.

The cost effectiveness of the ISEC or national universities is unequal in different countries. It depends on the economical base of education in these countries and, depending on the financing system, the universities develop along the different trajectories. For Russia as a whole, the state higher education enjoys support of the state budget and, in addition, is financed at the expense of paid commercial services. This was a reason of the fast growth of the higher education as well as the number of SECs in Russia for the last 10 years. Hence it follows that in Russia there are good prerequisites for creation of the economically efficient ISEC.

As to the competitiveness, the ISEC should occupy its niche in the regional education zone of the foreign countries. At first stage, the ISEC in Vladivostok can be oriented to the inflow of the contingent from the Far-Eastern countries of Commonwealth of Independent States and FERA, which prefers a teaching in Russian to that in English by virtue of a closeness of cultures and the fact that the peculiarities of construction of languages of a number of the Asiatic countries are closer to the Russian language than to the English one. Such niche will not intersect with niches of other FERA countries as well as the world leaders in the delivery of the English-speaking education services to the export.

As for the education market of the FERA countries, China should be distinguished. China adjoins Russian over a stretch of many thousands kilometers and, at present, occupies a dominating position at the world in the volume of the research and development activities in the field of innovative, science intensive technologies. China feels an essential deficit in the personnel for these technologies and is interested in a training of highly skilled specialists in the field of the information technologies, linguistics (specialists in Russian philology), electronics, construction and public health.

Based on the competitiveness with respect to teaching in other countries, the cost of education in the ISEC of Vladivostok for the foreign students at the first stage will not exceed USD 3 thousand a year (without taking a residence payment into consideration). At that, with regard to typical expenses (USD 2 thousands per one student) a year, the economic effect of the education activities of the ISEC can reach USD 0.3 million a year in case of admission of 300 students each year.

The efficient organization and management structure of the ISEC is shown in Fig. 1. Similar typical Russian SEC it includes: scientific-coordinating board; regular directorate; academic council; sector of foreign relations and international activities; sector of the logistical and financial support; sector of innovations and transfer of technologies; sector of research work (it includes the scientific heads of faculties); sector of general educational work (it consists of faculties and chairs heads); sector of the special scientific personnel (it includes deputy heads of chairs on work with post-graduate students and R&D of students); sector for work with the youth and pupils (it consists of deputy heads of chairs and head of the pre-university education department); sector of additional educational...
Figure 1. Organization and management structure of ISEC
services (it includes the heads of the proper divisions of the university) and science-educational groups formed for the profile projects from teachers and coworkers of chairs and research laboratories.

3. Conclusion
Goals, conception and organisation structure of international science-education center on nanoscience in Vladivostok are determined. Main idea of ISEC is optimal using of science manpower, laboratory base and material-technical resources of Vladivostok universities and institutes of Russian Academy of Science with location of ISEC near institutes of Russian Academy of Science. And main vector of the center activity is export of nano and advance education in countries of Far Eastern region of Asia.