



UNITED KINGDOM

Cooperative Activities under the SPS Programme

Since NATO began offering science cooperation to partners in 1992, scientists and experts from the United Kingdom have had leading roles in 1,780 activities, and more joined various cooperative activities as participants and key speakers.

Today, NATO science activities enable close collaboration on the two key priorities of **defence against terrorism** and **countering other threats to security** and are managed under the Science for Peace and Security (SPS) Programme. SPS activities contribute to NATO’s strategic objective of partnership, helping to connect scientists and experts from NATO countries with their counterparts from Partner and Mediterranean Dialogue countries through workshops, training courses, team collaborations and multi-year projects.



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All activities supported by the SPS Programme are approved by NATO nations on the basis of consensus.

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Examples of Activities

A cutting-edge project in the field of cyber security, “**Quantum Dot Single Photon Sources for Data Encryption**”, began in August 2007. Recognizing the urgent need to improve the security of data transmission and storage against penetration by terrorists, industrial spies and other criminals, investigators from the United Kingdom, United States, Russia and Germany are working on a new method of data encryption using quantum cryptography. This method takes advantage of the physical uncertainties associated with quantum mechanics, making error-free reading or cloning of single photon transmission impossible. Ultimately it is the aim of the project to produce a single photon source capable of operating at elevated temperatures. The prototype system may eventually be

commercialized by a high-tech company in St. Petersburg. [ref 982735]

Scientists from the United Kingdom, Italy, Kyrgyz Republic and Uzbekistan have been working together on a project aimed at increasing “**Geo-Environmental Security of the Toktogul Hydroelectric Power Station Region**”, with respect to seismic hazards. This region lies in the centre of the largest hydroelectric irrigation area in Central Asia. The approach is to evaluate the seismic security of the Toktogul region, formulate threat scenarios, develop recommendations for risk mitigation measures, and disseminate information on the potential hazards using a GIS database. Another principal objective is to identify the threats arising from earthquake-related



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disturbances to dumps of uranium tailings. The end-users of the results and recommendations of this study include the relevant ministries in the Kyrgyz Republic and Uzbekistan, as well as the Kyrgyzenergo Holding Company which runs the Toktogul operation. [ref 983142]

In the field of energy security, investigators from the United Kingdom, Azerbaijan, the Russian Federation, Ukraine and the United States have cooperated in the development of **“Solid Oxide Fuel Cells for Energy Security”**. Their goal has been to make an environmentally friendly “Intermediate Temperature” (650-800°C) Solid Oxide Fuel Cell (IT SOFC) with high power density, which would be useful in reducing the cost of decentralized energy generation and supply. The results of the projects will be made available to the end user Zirconia Ukraine, Ltd., which has already started manufacturing a fuel cell capable of producing about 50W electric power from hydrogen, methane or natural gas. The company will evaluate the fuel cell as a power source for various portable devices. [ref 980878]

In addition to NATO-funded activities, the SPS Programme facilitates the development of nationally funded activities, such as pilot study on **“Food Chain Security”**, which has been conducted in cooperation with the European Science Foundation (ESF). Experts from the United Kingdom joined their counterparts from other NATO and Partner countries to examine the safety and security of the

food system in the face of careless or ignorant handling, as well as potential terrorist attacks. The study includes the development of protective and response measures to reduce risk and mitigate the consequences of these incidents, which could occur at the source, or during distribution, processing or consumption. Over five years, nine meetings were held to enable high-level technical discussions among the international experts. The main outputs were the identification of common weaknesses and comparison of food systems among countries and a final report. The last meeting of the pilot study took place in September 2008, in Antalya, Turkey. [ref 982184]

The SPS programme has also engaged a number of consultants from the United Kingdom to lend their expertise in various



Prof. Nick Priest (left) of the United Kingdom was presented with the NATO Science Prize by NATO Deputy Secretary General Amb. Alessandro Minuto Rizzo on 22 March 2007, for an SPS-supported project assessing radioactive contamination at the nuclear test site at Semipalatinsk, Kazakhstan, which had been operated by the Soviet Union. His collaborator, Prof. Mukash Burkitbayev of Kazakhstan, shared the prize.

fields—such as seismic risk mitigation, water resource management and pharmacology—to technical advice and monitoring of projects.