



FRANCE

Cooperative Activities under the SPS Programme

Since NATO began offering science cooperation to partners in 1992, French scientists and experts have had leading roles in more than 1,452 activities, and have joined other 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.

Examples of Activities

On 5 to 9 July 2010 an Advanced Training Course on **“Risk Prevention for Environment and Human Society against Dangerous Goods Transport Accidents and Malicious Intents: Methods and Tools”** will take place in Paris, France. This SPS event will look at the increased transportation of goods across the world due to globalisation. This also includes Dangerous Goods Transport (DGT) which utilizes different kinds of transport systems such as land, rail, air and pipelines. Although the risks are very low, the consequences are regarded as ‘major’ when it involves a large number of people, buildings, infrastructure, ecosystems and environmental resources. This SPS training course aims to encompass the main methods and tools to support the definition of a policy and a planning activity

dedicated to DGT risk prevention and the mitigation of the consequences induced by accidents or malicious intent. [ref 983903]

On 19-24 November 2009, scientists participated in a high-level tutorial course on **“Radiation Protection in Medical Physics Activities”**, in Archamps, France. The course covered a wide spectrum of medical techniques that use ionizing radiation, and included discussions on how to maximize medical benefits while reducing risks from exposure to radiation. The organizers saw a need to establish standardized European procedures and a common understanding of quality assurance and security issues. The course enables a high-level skills transfer to young physicists from Eastern European and Mediterranean countries. [ref 983455]

Scientists from the United States, France and Ukraine have cooperated since October 2007 to develop a **“New Generation of Multi-Energy X-Ray Scanners for Anti-Terrorism Inspection”**, for the quantitative detection of explosives with a probability up to 90-95%. The target is detection of solid and liquid explosives, even when embedded in a background of inert organic materials with similar densities, which involves a new approach to visualization and recognition using X-rays in the dual- and multi-energy regimes. It is expected that the combination of two different technologies in one instrument, alongside a new method for determination of the atomic and chemical composition of materials, will lead to substantial improvements in sensitivity to illegal and dangerous materials. [ref 982823]

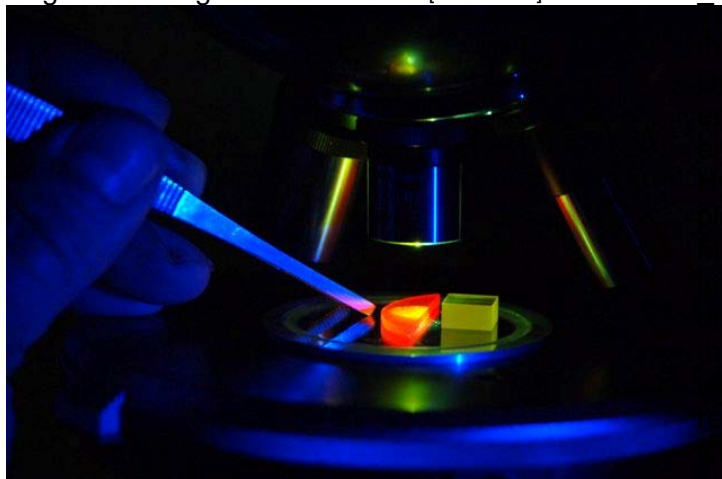


Photo: Dr Rhyzikov

ZnSe luminescence: Comparative luminescence of two scintillators based on zinc selenide placed on the object stage of an optical microscope. Red luminescence color - ZnSe(Te), yellow – ZnSe(Al,O). Both scintillators have been grown at STC “Institute for Single Crystals” (Kharkov, Ukraine). (Scintillation materials for X-ray scanners of a new generation. Zinc selenide ZnSe – a high-efficiency “red” scintillator for anti-terrorist X-ray equipment, which is the main element for radiation detectors used in multi-energy X-ray scanners)

Since October 2006 researchers from France, Spain, Italy, Portugal and Russia have worked together to develop more

sensitive ways of detecting chemical threats. The plan of this project, **“Using Selective Porous Concentrators for Chemical Detection”**, is to design a system that can accomplish rapid (1-2 min.) and highly sensitive (5-10 ppb) detection of toxic gases in the air, even in the presence of masking agents such as smoke, perfume and human metabolic products. This effort has involved the development of a highly selective molecular sieve to reduce interference and to concentrate specific toxic agents. The end-users include the Institute of General and Inorganic Chemistry and the Zelinsky Institute of Organic Chemistry, both in Moscow. [ref 982166]

In the field of energy security, scientists from France, Germany, Mauritania, Morocco and Turkey are cooperating on a project to use the prevailing trade winds over the Sahara desert to produce hydrogen for sustainable energy systems. This collaborative project, titled **“Sahara Trade Winds to Hydrogen”**, involves building two research platforms at the main research centres in Morocco and Mauritania. The aim is to integrate intermittent sources of renewable energies into the weak grid infrastructure of the Saharan/Sahel region, and the initiative will later be extended to other countries in the region including Senegal, Mali, Niger and Chad. Hydrogen produced by wind-driven electrolysis can be used for power storage and also for fuel or chemical feedstock in specific industries. This will help to counter the rampant desertification that threatens these largely agriculture-based societies. [ref 982620]

The SPS programme has also engaged a number of French consultants to lend their expertise in various fields—such as communications security, water resource management and radioactive countermeasures—to technical advice and monitoring of projects.