

more light on optical technology

“ I am optimistic that the ERA-SPOT will help to make progress in two ways: improving framework conditions and raising awareness of OT research in Europe, and achieving concerted actions in order to enhance efficiency and competitiveness at a global scale ”

The photon, or quantum unit of light, is expected to form the basis of much future technological development, in the same way that the electron has in recent years. It will underpin advances in optics, optoelectronics and photonics that will speed up chip manufacture, information transmission and clinical diagnostics, and extend the range of lasers and nanotechnology. The rich possibilities offered by optical technology have led to a number of national research programmes in specific applications. The main responsible funding organisations are now joining in a EU coordination action, ERA-SPOT (Strengthening Photonics and Optical Technology for Europe), to share information and increase programme coordination.

Optical technology is already changing the way we work. Fibre optics offers much faster data transmission and communications, and assists medical diagnosis and keyhole surgery. Future uses include optical biochips to test drugs more rapidly and tailor them to specific diseases; in vivo monitoring of intracellular processes; optical screening of food products for safety; and more rapid manufacture of micro-electronic chips. The precise light of lasers is used for many types of cutting and shaping in all branches of industry, from car manufacture to printing, with yet unexploited potential in new high-powered lasers and high-precision femtosecond lasers. These developments could offer Europe step-wise increases in productivity and economic growth.

Optical linkages

A number of Member States place a high priority on optical technology (OT) research, and academics and industry have set up several networks and consortia to collaborate in the field. The first objective of ERA-SPOT is to support co-operation between national and regional research programmes so that a greater range of activities can be coordinated. This will enable members to develop mechanisms and strategies for joint activities. The final goal is

to establish the ERA-SPOT ethos in a long-term institution able to foster progressive collaboration between its members.

ERA-SPOT links all the significant European OT programmes, from seven Member States, and with a current investment of around €100 m in OT research. It will add value to this work, helping Europe to become more competitive in this field and to play an important role on the world OT stage.

Pioneer work in four phases

The first criterion for exchanging information on optical technology programmes is to establish a communications structure based on a web platform. Through this, the relatively small number of active OT research participants will share details of the content and management of their programmes and what their RTD priorities are. Information exchange will be enhanced by short exchange visits to share good practice and evaluation methods.

This will lead to the next phase of analysing programmes and practices, both European and global, to identify barriers and opportunities for programme co-operation. It will give the Commission an overview of current and future developments in OT. By the end of the first year, a joint transnational research project will be started as a test case for co-operation.

The test case will lead on to a more structured joint research agenda, with common funding mechanisms to be set up at programme level. The harmonisation of



Coordination Action ERA-SPOT



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“ *Personally, I am really looking forward to the exchange with colleagues from abroad and to learn more about related research programmes, strategies and innovation systems in other Member States* ”

Full title:

Strengthening Photonics and Optical Technologies for Europe

Research field:

Optics, photonics, optoelectronics and laser technology

Co-ordinator:

Germany: VDI Technologiezentrum GmbH

Partners:

- Austria: Austrian Research Promotion Agency (FFG) - Federal Ministry for Transport, Innovation and Technology (BMVIT)
- France: National Center for Scientific Research (CNRS)
- France: Ministry of Research (MR-DR)
- Germany: Ministry of Education and Research (BMBF)
- Ireland: Enterprise Ireland
- Slovenia: Ministry of Higher Education, Science and Technology (MHEST)
- Sweden: Swedish Agency for Innovation Systems (VINNOVA)

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national programmes within this framework will also be discussed. Project partners will work together to produce agreed evaluation guidelines, multinational review approaches and joint foresight and training activities.

The final phase will be to implement the planned procedures in a joint action plan. This will cover guidelines for transnational calls for joint research programmes, including financial management, demonstrated through the launch of pilot joint calls. The common strategies and procedures will be introduced, and joint training and dissemination activities will be agreed. Members will also try to enlarge the ERA-SPOT network, particularly through helping new Member States to develop OT programmes and activities.

Innovation in action

As photonics and optical technology have already encouraged the emergence of some innovative SMEs, ERA-SPOT will consider special support measures for smaller companies. Its cross-border mechanisms will be vital in creating a sufficient critical mass of excellence to foster new developments in techniques, such as manufacturing advanced electron chips with wafer steppers and wafer scanners, in which the optical systems and sources are the critical elements; rapid drug development and medical examination by means of biophotonics; or revolutionary lighting and display technologies using ultra-bright, highly efficient LEDs (light emitting diodes) and new flexible, large surface OLEDs (organic LEDs).

The coordination of national OT research efforts will enable Europe to hold its place in the growing world market for such new developments in the optical field.