

To continue as an
FP7-funded project

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LASERLAB-EUROPE: Integrated European Laser Laboratories

Europe has a very strong position in laser research, which is important for new developments in communication technologies, life sciences and many other fields. The LASERLAB-EUROPE project, which benefits from EU funding, links 17 major laser laboratories across Europe. Over the five-year duration of the project, the partners will provide nearly 4 000 days of access to researchers. Two joint research activities will develop new high-power laser systems and novel ways to control coherent light completely, while networking activities will raise the profile of laser research and improve access to facilities.

● LIGHTING UP THE WORLD OF LASER RESEARCH

Lasers crop up, it seems, practically everywhere in the modern world. From supermarket barcode scanners to communication highways, from mapmaking to missile guidance, from minimum invasive surgery to automobile production – the special properties of laser light are invaluable.

To make sure that European laser research and technology continues to develop on course, the project has brought together 17 leading research organisations from nine countries, including the national laboratories of many European countries. The project includes networking activities and joint research. It also provides transnational access to top-quality laser research facilities for scientists all over Europe.

LASERLAB EUROPE includes five networking activities. The 'Virtual Laser Infrastructure' uses novel web-based tools to provide a common technology foundation for the project partners, allowing each to carry out all the functions expected of a major laser research institute, with expert support for users. 'Transverse Activities' is concerned with improving the resources within each partner organisation, with the goal of developing synergies as well as providing new facilities.

● RAISING THE PROFILE OF LASERS

The transnational access programme of LASERLAB EUROPE will provide European researchers with nearly 4 000 days of access to laser research facilities. The programme runs throughout the lifetime of the project, and includes support and training, travel and accommodation for those applicants who are selected.

The other networking activities – 'Users Connections', 'Dissemination and Publication' and 'Foresight Activities' – will respectively collect feedback from customers of the partner organisations, explain the aims and achievements of the project, and plan the future of laser research in Europe.

The project's two joint research activities (JRAs) are pushing the forefront of laser research through the combined efforts of several participating laboratories with specialised know-how. The first, Frontiers of Optical Science: Controlling Intense Light (FOSCIL), aims to develop phase-controlled few-cycle terawatt lasers, and to improve the conversion of their output into the near infra-red (NIR), ultraviolet (UV), extreme ultraviolet (XUV) and "soft" X-ray (SXR) bands.

The second JRA, Overcoming the Technology Barriers (OTTER), is working on ultra-high intensity lasers. The plan is to understand and overcome current limitations on laser output, to use a new technique known as optical parametric chirped pulse amplification (OPCPA) to produce shorter and more intense output pulses and to develop alternative new technologies to allow operation at higher pulse repetition rates.

Overall, the project has succeeded in bringing together most of the largest European national laboratories in laser-based, interdisciplinary research, as well as other laboratories with special expertise and equipment. The JRAs are working to strengthen Europe's leading role in laser research and improve facilities at the partner organisations.



EUROPEAN COMMISSION

The results of LASERLAB EUROPE are expected to include: higher profiles for the participating organisations and the consortium as a whole; new discoveries that will fill gaps in existing laser

technology; and a more integrated approach to laser research in Europe. Through its virtual infrastructure, the project will lay the foundations for lasting and sustainable networking.

● INTEGRATED EUROPEAN LASER LABORATORIES IN SUMMARY

Project acronym: LASERLAB-EUROPE

Funding scheme (FP6): Integrated Infrastructures Initiative (I3)

EU financial contribution: €14.2 million

EU project officer: Christian Kurrer

Duration: 60 months

Start date: 1 January 2004

Completion date: 31 December 2008

Project webpage: www.laserlab-europe.net

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Polytechnique (FR), Université Bordeaux-I, Centre Lasers Intenses et Applications (FR), Commissariat à l'Energie Atomique (FR), Saclay Laser-Matter Interaction Center, DSM/DRECAM/SLIC (FR), Centre d'Etudes Scientifiques et Techniques d'Aquitaine, DAM/CESTA/DLP (FR), Council for the Central Laboratory of the Research Councils, Central Laser Facility, STFC (UK), Fachinformationszentrum Chemie (DE), Foundation for Research and Technology-Hellas (EL), Institute of Electronic Structure and Laser, Ultraviolet Laser Facility (EL), Friedrich-Schiller-Universität Jena (DE), Institut für Optik und Quantenelektronik (DE), Gesellschaft für Schwerionenforschung, GSI (DE), Laboratorio Europeo di Spettroscopia Non Lineari (IT), Lunds Universitet, Lund Laser Centre (SE), Czech Academy of Sciences, Institute of Physics (CZ), Politecnico di Milano, Centre for Ultrafast Science and Biomedical Optics (IT), Max-Planck-Gesellschaft zur Förderung der Wissenschaften (DE), Vilnius University (LT), Vrije Universiteit Amsterdam (NL)