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## EMFL - Plans for a European High Magnetic Field Facility

The application of high magnetic fields represents one of the most important tools in condensed matter research. For over a century, the development of more and more powerful magnets has been at the origin of both new fundamental discoveries (e.g. the quantum Hall effect) and widespread applications (eg NMR spectroscopy and MRI). These have in turn stimulated substantial investments in magnet technology. In recent years this evolution has given rise to an increasing centralization of high field research activities in a few large user facilities.

Since 2002 the four largest European high magnetic field centers are organized in a strategic network financed by national funding agencies as well as the European Community (6th and 7th framework programme). The EuroMagNET consortium provides access to its partner installations located in Dresden, Grenoble, Nijmegen and Toulouse by ways of a biannual call for proposals. Projects submitted by both external and internal users are evaluated with respect to their feasibility and scientific content by an international selection committee before being implemented in one of the facilities.

In order to consolidate and improve the free access to high magnetic fields for the international user community, it is planned that the existing network will eventually evolve into a delocalized laboratory, the European Magnetic Field Laboratory (EMFL). As of 2009, this strategy has been integrated in the ESFRI roadmap for European large installations and is planned to be subject to a preparatory design study.

Outside Europe the EuroMagNET partners maintain good contacts with comparably large installations in the United States, Japan and, more recently, China. Apart from joint scientific projects, an important future challenge for these transcontinental collaborations will be to seek common solutions for technical problems such as the industrial supply of high-tech materials for constructing advanced magnets or, inversely, the commercialization of high-tech materials developed in the partner laboratories.

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