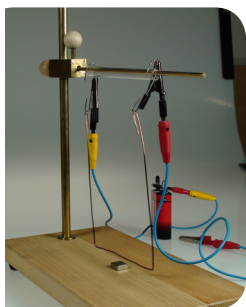


# MOdelling and data acquisition for continuing vocational training of upper secondary school physics teachers in pupil-active learning of Superconductivity and ElectroMagnetism based on Minds-On Simple ExperiMents



Lorentz force measurement. Photo courtesy of UMK

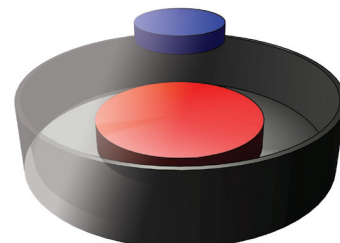


Project meeting in Brno, Czech Republic. Photo courtesy of the University of Ostrava



Measuring the critical temperature and resistance of a superconductor in Graz, Austria. Photo courtesy of Simplicatus

## MOSEM<sup>2</sup>



Project logo: Strong magnet levitating above cooled superconductor

### Type of project

Multilateral project, Transfer of Innovation

### Project Contractor

Simplicatus Research and Development AS, Norway

### Contractual year

2008

### The Challenge

Europe needs more competent physics teachers in order to reverse the negative attitude towards physics and science among high-school and vocational training students. Recent investigations point to modelling and quantitative experiments as important activities in this respect.

### Short description

The MOSEM<sup>2</sup> project idea was conceived during the SUPER-COMET 2 project. It is closely connected to and builds on the materials developed by its twin project MOSEM. New teacher seminars promote active learning where students develop models and simulations, and collect data from MOSEM and other experiments. Development in 2009-2010 is followed by testing and revisions in 2010-2011, and finished versions will be ready by the end of the project.

### Objectives

Training science teachers how to implement the modelling approach in their teaching activities, trialling this pedagogy and teaching methods with the developed materials and probe how it affects the learning and enthusiasm of teachers and students.

### Target groups

MOSEM<sup>2</sup> primarily targets science teachers in upper secondary schools and trainee science teachers. Also teacher training departments at universities that will implement the teacher seminars and new materials developed by the project.

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### Participating countries

Austria, Belgium, Bulgaria, Czech Republic, France, Italy, Netherlands, Norway, Poland, Spain, UK

### Partnership description

The project has 30 partners in 11 countries. 9 universities, 2 foundations and Simplicatus AS will develop the project deliverables. Testing and dissemination is carried out with 13 upper secondary schools and 8 valorisation partners.

### Expected outcomes

The MOSEM<sup>2</sup> project will augment the experiments and materials from the twin project MOSEM by developing a set of models and simulations covering a series of topics in electromagnetism and superconductivity, and creating a collection of real-life data in the form of pictures, videos, and data-acquisition activities. This is supported by a teacher seminar and a printed teacher guide for lifelong learning.

### Valorisation

Large national organizations for teachers and engineers participate as valorisation partners, among them several teacher organizations in Belgium, NITO, Tekna, the Union of Education and Nordnorsk Science Centre in Norway, and the Polish Association of Science Teachers. Simplicatus Research and Development AS and several other organisations will promote the various products after project completion.

### Web resources

mosem.eu  
supercomet.eu  
youtube.mosem.eu

