

GEOLOGICAL SURVEY OF FINLAND

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ProMine, coordinated by GTK, has been selected as the best technology project in the EU's seventh Framework Programme

The ProMine project (Nano-particle products from new mineral resources in Europe), coordinated by GTK, was awarded as the very best of all the projects launched under the EU Framework Programmes in the field of Industrial Technologies. The awards ceremony took place at the Industrial Technologies 2014 conference in Athens on 10 April.

Director Clara de la Torre, European Commission - DG for Research and Innovation, handed over the award to the project coordinator Juha Kaija and research director Pekka Nurmi. Selection of the best project was made by the European Advisory Group which consisted of distinguished experts representing policy, industry and research organizations. The main criteria for granting the award were the scientific level of research, results achieved and the commercial usability of the results.

ProMine had a strong impact on the European Commission's raw material initiative and new European Innovation Partnership on Raw Materials. ProMine has paved the way for the sustainable raw material use projects which will be funded from the EU's new Horizon 2020 programme.

ProMine included 30 partners from 11 European countries. The total budget of the project was about €17 million, of which EU contribution accounted for €11 million. The scope of the European expert network created in ProMine is unique: in 2009–2013, more than 400 experts worked in the GTK-led project, in the fields of geology, metallurgy, biochemistry, lifecycle analytics, environment research, and communication.

A leap towards more sustainable mining

It can be expected that the products and production methods created in the project will help Europe take a leap towards more sustainable mining. In total, the ProMine project brainstormed 14 patents related to mineral products obtained from mining and metallurgy waste, and to advanced mineral processing methods.

For example, ultra-pure nanosilica was energy-efficiently produced from waste material contained in magnesite mines in Greece. This kind of nanosilica is more pure than what is on the market, and less expensive to produce. Nanosilica can be used for example on the surfaces of abrasive paper and printing paper optimised for ink-jet printers. In construction materials, nanosilica improves technical features and reduces strain on the environment. The nanosilica research was led by Selor and University of Eindhoven from the Netherlands. From Finland, the development work was contributed by VTT and Mirka, the world's leading producer of abrasive materials.

The Polish partners IMN and KGHM-Ecoren achieved excellent results in the production of rhenium super alloys. Rhenium is one of the rarest and most expensive metals on Earth; the aviation and space industry needs it for jet turbines enduring very high temperature levels. In 2012, global rhenium production only stood at about 45 tonnes.

The project created the first Europe-wide mineral database and survey of critical raw materials. European ore zones applied modern ore modelling methods to find new ores. The results are very promising and ProMine showed that Europe is still strongly underexplored and there are lots of ore deposits in Europe to be found, especially in the deeper bedrock layers.

Through new processing methods, it is possible to obtain metals valuable to society from mine waste areas which have not been utilised at all yet. The project also developed mine wastewater processing

methods that will have a major impact on environment purification.

For further information, please contact: GTK, Juha Kaija, ProMine Project Coordinator, juha.kaija@gtk.fi, tel. +358 29 503 2572; Pekka Nurmi, Research Director, pekka.nurmi@gtk.fi, tel. +358 29 503 2325.

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