



SLOVAK UNIVERSITY OF  
TECHNOLOGY IN BRATISLAVA  
FACULTY OF MATERIALS SCIENCE  
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# EXCELENCE CENTRES

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# EXCELLENCE CENTRES

Name of project:

**Centre of development and application of progressive diagnostic methods for processing metal and non-metallic materials**

ITMS of project: 26220120014  
Duration of project: 05/2009-04/2011  
Workplace: Institute of Materials  
Operational programme: OPVaV - 2008/2.1/01-SORO

## Annotation

The project is aimed at building a modern dynamic Centre of excellent analytical methods utilising the current advanced knowledge on the interaction of electron and laser beam with substance, top detection systems of high sensitivity, modern mechanical procedures and monitoring the electric and on-electric quantities. It is focused on evaluating the specific properties of progressive metallic and non-metallic materials prepared by the advanced technological procedures. The project goals comprise the building of a modern diagnostic centre for evaluating/assessing the properties of metallic and non-metallic materials, elaborating new procedures and methods for utilising advanced analytical devices, and identifying structural, mechanical and electric properties of materials in the manufacturing process.



Name of project:

**APRODIMET - Excellence Centre for development and application of diagnostic methods of processing the metal and non-metallic materials**

ITMS of project: 26220120048  
Duration of project: 01/2010-12/2011  
Workplace: Institute of Materials  
Operational programme: OPVaV - 2009/2.1/02-SORO

## Annotation

Project is focused on enhancing the equipment of a modern dynamic centre of excellent and analytical methods. It will utilise the latest knowledge of X-ray interaction with materials, along with advanced procedures of measuring and assessing mechanical, thermo-physical and corrosive properties of progressive metal and non-metallic materials, top thermodynamic detection systems of extra sensitivity and advanced procedures of processing the surface layers. The centre will provide the assessment of various physical-chemical effects on the life and exploitation properties of metal and non-metallic materials. The project implementation gave rise to five complex laboratory units: Laboratory of heat flows, Laboratory of thermo-physical measurements, Laboratory of corrosion tests, Laboratory of structural analyses and Laboratory of coating and heat treatment.

Name of project:

**Excellence Centre of 5-axis machining**

ITMS of project: 26220120013  
Duration of project: 05/2009 – 04/2010  
Workplace: Institute of Production Technologies  
Operational programme: OPVaV - 2008/2.1/01-SORO

## Annotation

Establishment of the new Excellence Centre and its sustainability will support the advanced technologies of 5- axis machining, their research, HSC CNC milling and turning of free-form surfaces, CNC ultrasonic and laser machining of so-called hard-to-machine materials, and utilising CA technologies within CAD/CAM/CNC/CAQ.



Name of project:

**Excellence Centre of 5-axis machining - experimental basis of high-tech research**

ITMS of project: 26220120045  
Duration of project: 01/2010-12/2012  
Workplace: Institute of Production Technologies  
Operational programme: OPVaV - 2009/2.1/02-SORO

## Annotation

The project's aim is to enhance the machinery pool of the Excellence Centre of 5-axis machining by the machine tools and robots in the workplace of CNC HSC HIGH -Technologies of machining. Another task is to build a basic device pool of the Workplace for measurement and control within the Excellence Centre of 5-axis machining, in order to support and implement the common research with CNC HSC HIGH –Technologies of Machining in the following fields: methods and strategies of 5-axis machining on 5- axis machine tools of two different constructions, CNC laser machining, CNC grinding of free form tools, 3D scanning of free form parts, 3D control of forms and shapes of free form tools, exact measurements of the cutting fluids' quality, measuring the inorganic and organic carbon, measuring the cutting forces in milling and turning (both in workpiece and tool), liquidating the bacteria by Ozoniser, and finally balancing the cutting tools.