Measurement solutions for your needs

CEMIS-OULU is a measurement technology research unit jointly funded in 1991 and re-organized in 2011. The aim of the unit is to carry out research and technology development and provide r&d-services in this selected fields of measurement technology. We provide our expertise and equipment for the use of companies, research institutes and other organizations in the form of commissioned research and joint funded projects. All our competence areas have unique research environments at your disposal, creating a competitive edge for your business.

CEMIS-OULU consists of the following three research groups: Analytical and bio-analytical chemistry, Optical spectroscopy and Image-based measurements. We have some 60 professionals with multi-disciplinary education and expertise who are ready to tackle with your measurement challenges.

We offer measurement and information system oriented partners:

**ANALYTICAL CHEMISTRY AND BIOANALYSIS SERVICES**

- **Mission:** Develop on-line biosensors for human physiological, environmental measurements and selected industrial applications, and provide special analytical services
- **Core competencies:** Biosensor development (electrochemical enzyme and immunosensors and optical SPR-based sensors) and analytical chemistry
- **Services:** Joint-funded research, commissioned technology development, analytical services, special training courses, consultation and facility and equipment rental
- **Main application areas:** Sport and wellbeing, process industry (mining, chemical, forest, and food processing industries) and environmental monitoring
- **Examples of analytical services:** Food composition analysis, bacteria enumeration, antioxidativity (ORAC), anions (e.g metals) and cations (e.g ammonium)
- **Key equipments:** Capillary electrophoresis (CE), flow cytometer (FC), high performance liquid chromatography (HPLC-DAD/Rl/FD/MSD), gas chromatography (GC-FID/MSD), supercritical fluid extraction (SFE), spray drier, multiplate reader (with DAD/FD/luminescence detectors), potentiometers, SPR, and various sample treatment equipments

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CEMIS Centre for Measurement and Information Systems

is a community of 120 measurement and information system experts combined with excellent research and training environments. The combined annual funding of the various units is approx. € 10 million.

Competence focuses:
- Process and environmental measurements
- Sports, exercise and well-being measurements
- Vehicle information and measurement systems
- Computer games and simulators

Our aim is to be Finland’s leading research and training centre specialising in measurement and information systems within our selected top fields by the year 2015. With the support of our committed partners, we will create leading experts, new technology and new business operations in an innovative and international environment.

> www.cemis.fi

OPTICAL SPECTROSCOPY
- **Mission:** Develop field-applicable on-line sensors and analysers based on optical spectroscopy
- **Core competencies:** Field-applicable on-line analysers based on optical spectroscopy (transmission, refraction, scattering, fluorescence and emission techniques), optical characterisation of liquids, particles and solid material (light-material interaction), fouling-free sensor solutions, and on-line sensors, analysers and measurement device design and prototyping, data analysis procedures
- **Services:** joint-funded research, commissioned technology development, consultation and facility and equipment rental
- **Main application areas:** process industry (mining, chemical forest and mechanical wood processing industries), environmental monitoring, and sport and wellbeing
- **Laboratory facilities:** Controlled test track for moving objects, test rig for pulp and other solids containing liquids, wood thermal treatment and drying chambers, wood strength measurement devices, test rig for on-line liquid quality sensors, platform for distributed sensor network

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IMAGE-BASED MEASUREMENTS
- **Mission:** Develop 3D imaging methods for on-line inspection of industrial materials
- **Core competencies:** Camera-based technologies for dimensional, topographical (2D) and tomographical (3D) using digital in-line holography, high-speed imaging technologies, digital image analysis, scattering, structured laser light and laser triangulation techniques
- **Services:** joint-funded research, commissioned technology development, consultation and facility and equipment rental
- **Main application areas:** process industry (mining, chemical forest and mechanical wood processing industries), sport and wellbeing and environmental monitoring
- **Laboratory facilities:** Digital in-line holography setups, www-based platform for image analysis, high-speed cameras, high-speed flash illumination devices, SICK-laser profilometers, high-resolution digital cameras, electrophoretic force-based platform for particle manipulation (electric tweezers)

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