

# European Metrology Research Programme



## New Technologies

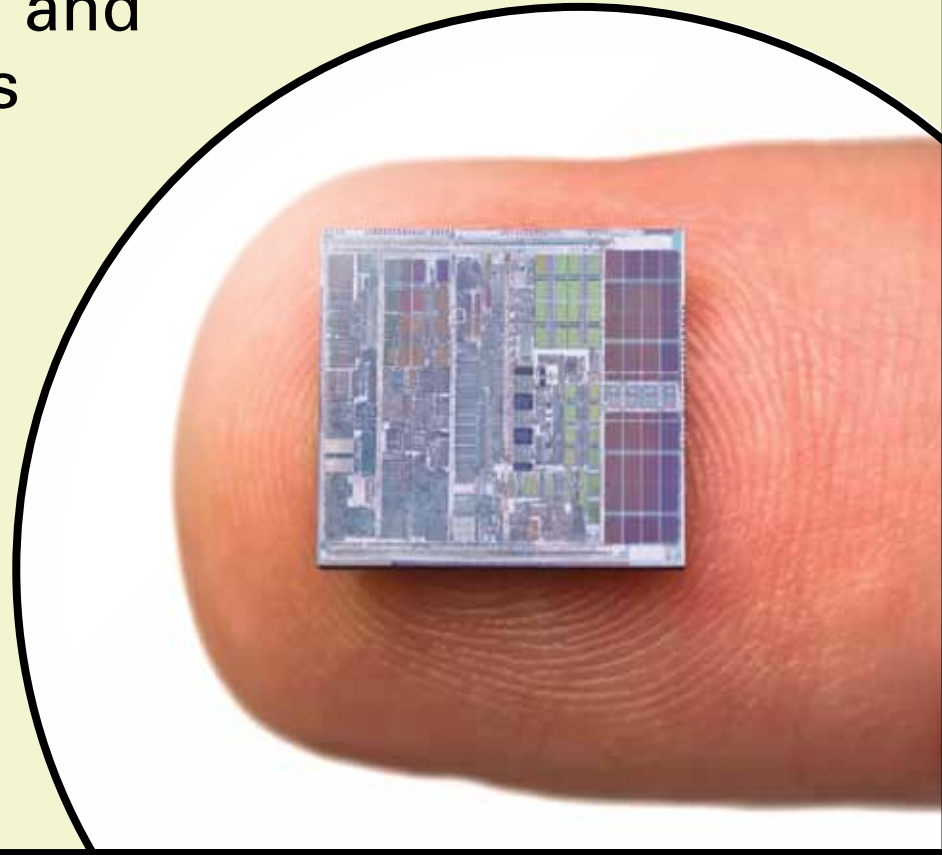
An overview of the funded projects from the Targeted Programme New Technologies

### New measurements for new electronics

Traceable characterisation of nanostructured devices (NEW01)

#### Supporting the European semiconductor industry

The growth in micro and nano electronics has led to new 3D architectures and organic materials being used in semiconductor materials, in place of silicon. This project will support the semiconductor industry by developing and improving the methods for characterising the chemical and electrical properties of nanostructures, and make comparisons between the different techniques.

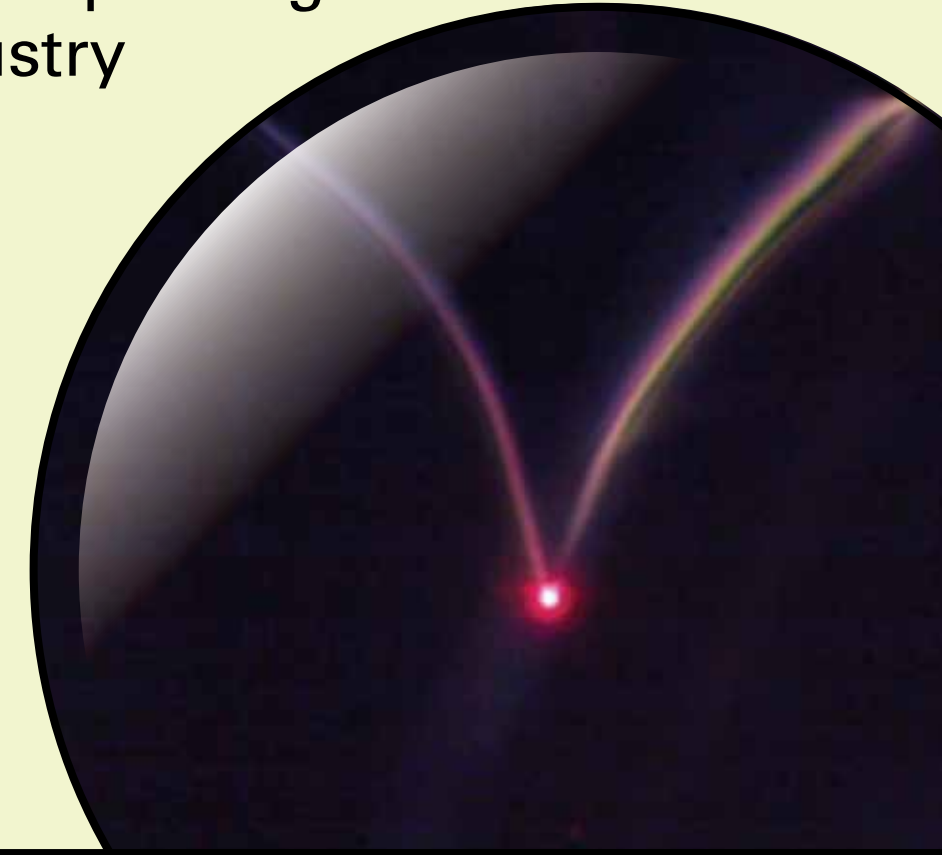


### Improving Raman spectroscopy

Metrology for Raman spectroscopy (NEW02)

#### Reliable identification at the nanoscale

Raman spectroscopy uses scattered light to identify and map the distribution of chemicals and structures at the micro- or nanoscale, but it is a relatively new technique. This project will improve measurement reliability, establish traceability to the SI units, and develop reference samples for Raman Spectroscopy, improving its use in science, industry and healthcare.

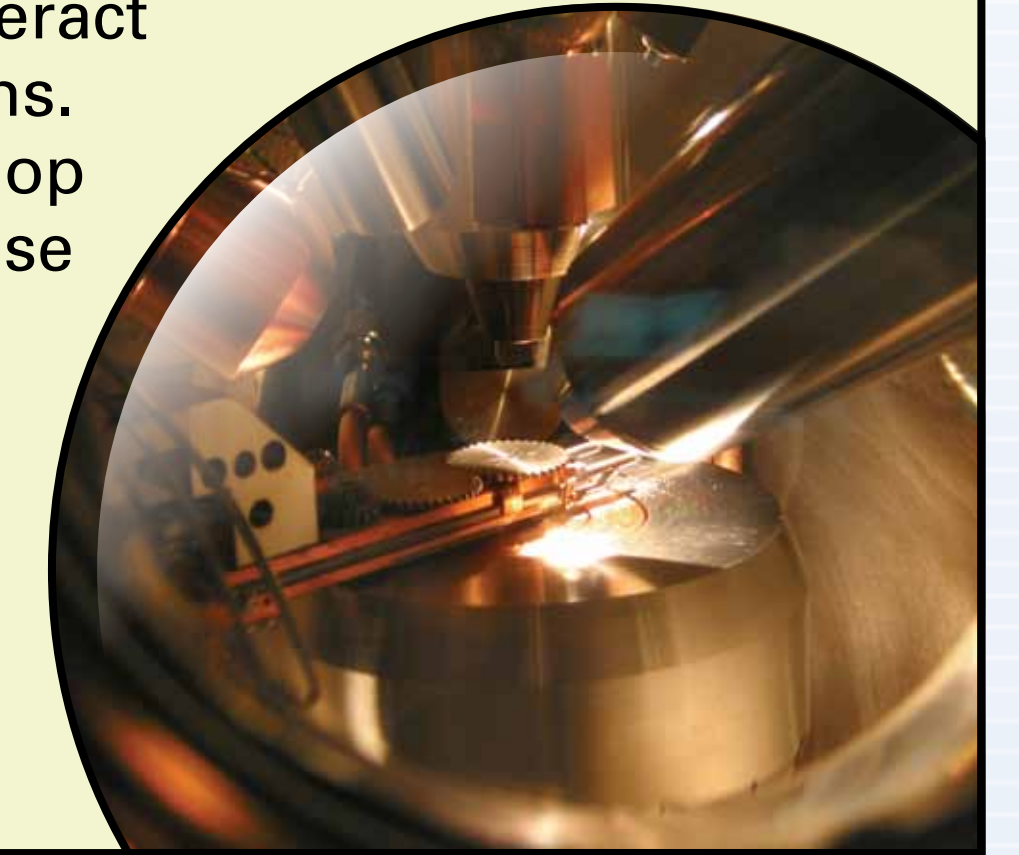


### Nanomaterials in biological environments

Chemical and optical characterisation of nanomaterials in biological systems (NEW03)

#### Supporting nanotechnology with physical, chemical and optical characterisation

Companies are increasingly using nanoscale materials in products but there is concern over the potential risk to health, as their properties can change when they interact with biological systems. This project will develop methods to characterise nanomaterial properties in biological environments.

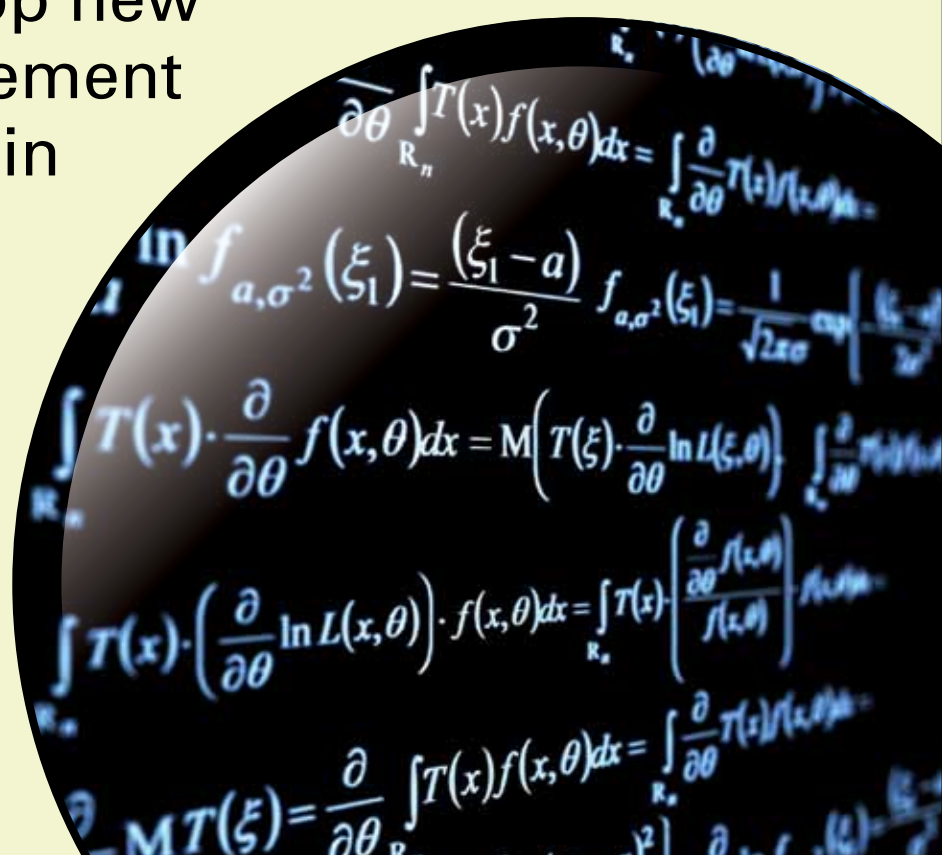


### Evaluating uncertainty

Novel mathematical and statistical approaches to uncertainty evaluation (NEW04)

#### Better measurement uncertainty analysis

The evaluation of uncertainty in a measurement is fundamental to measurement science. Without it results cannot be compared, and unreliable uncertainty evaluations can have huge negative economic, health and environmental impacts. This project will develop new approaches to measurement uncertainty evaluation in order to help improve product testing, medical diagnosis and drug testing.

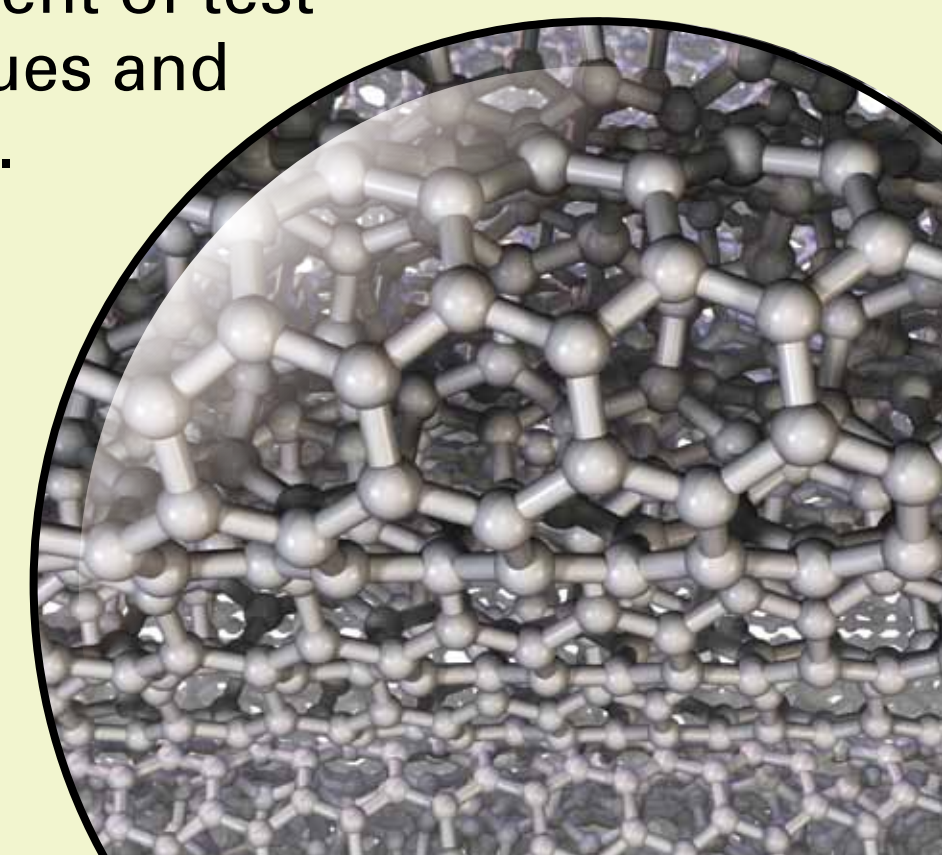


### Exploiting nano-object properties

Traceable measurement of mechanical properties of nano-objects (NEW05)

#### Getting nano products to market

Nano-objects can be used to improve products like high strength concrete, but their small size makes it difficult to measure their properties. This project will develop measurement traceability for the mechanical properties of nano-objects such as nanoparticles, nanowires and composite materials through the development of test samples, new techniques and improved instruments.



### Computers in coordinate metrology

Traceability for computationally-intensive metrology (NEW06)

#### Building trust in measurement software

Information and Computing Technology (ICT) plays a large role in many areas of measurement, and measurement software must be fit for purpose. This project will use mathematics, numerical analysis and state of the art computer technology to validate software and develop new technologies to deliver traceability to measurements that require intensive computing.



### Measurement for homeland security

Microwave and terahertz metrology for homeland security (NEW07)

#### Improving microwave and terahertz scanners for security

Despite the increased use of microwave and terahertz technologies in security applications, the properties of these scanners and spectrometers remain difficult to measure. This project will develop measurement traceability for sub-mm and THz frequencies to help get the best performance out of devices at the lowest possible radiation levels and to quantify safe human exposure.

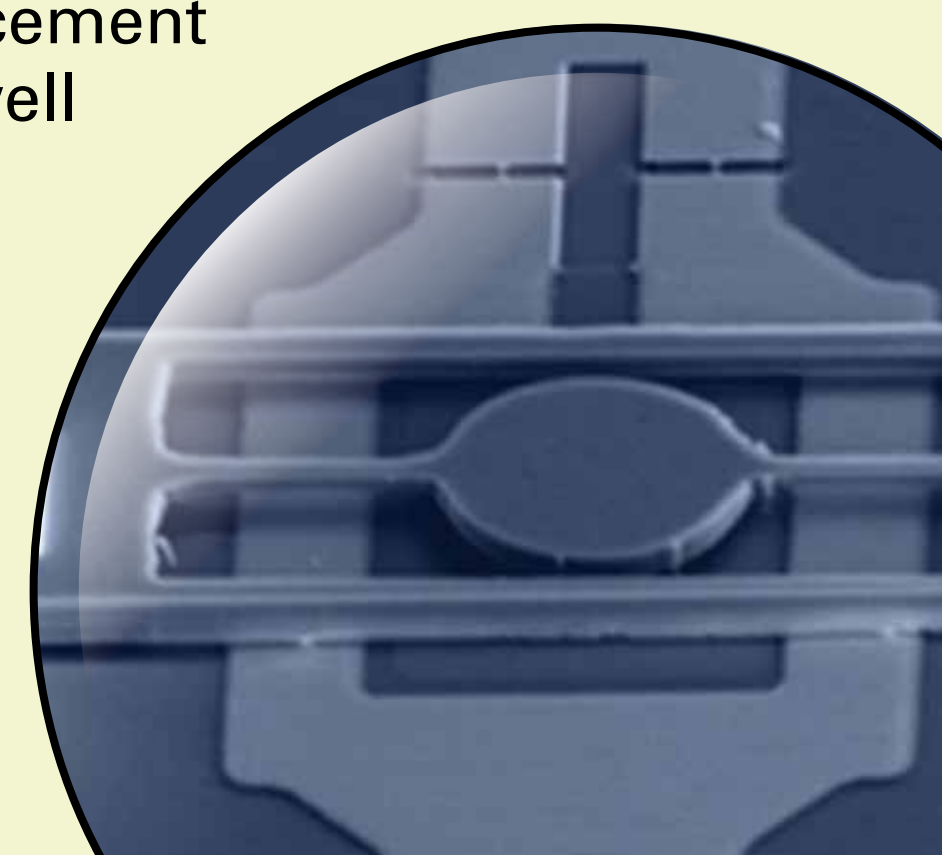


### Supporting nano-electro-mechanical devices

Metrology with/for NEMS (NEW08)

#### Innovative measurements for future technologies

Nano-electro-mechanical systems (NEMS) integrate electrical or mechanical functionality at the nanoscale and could overcome a range of technological barriers. This project will develop better measurements of physical parameters such as mass, force, displacement and temperature, as well as single photons and molecules, at the nanoscale level to support the exploitation of NEMS devices.

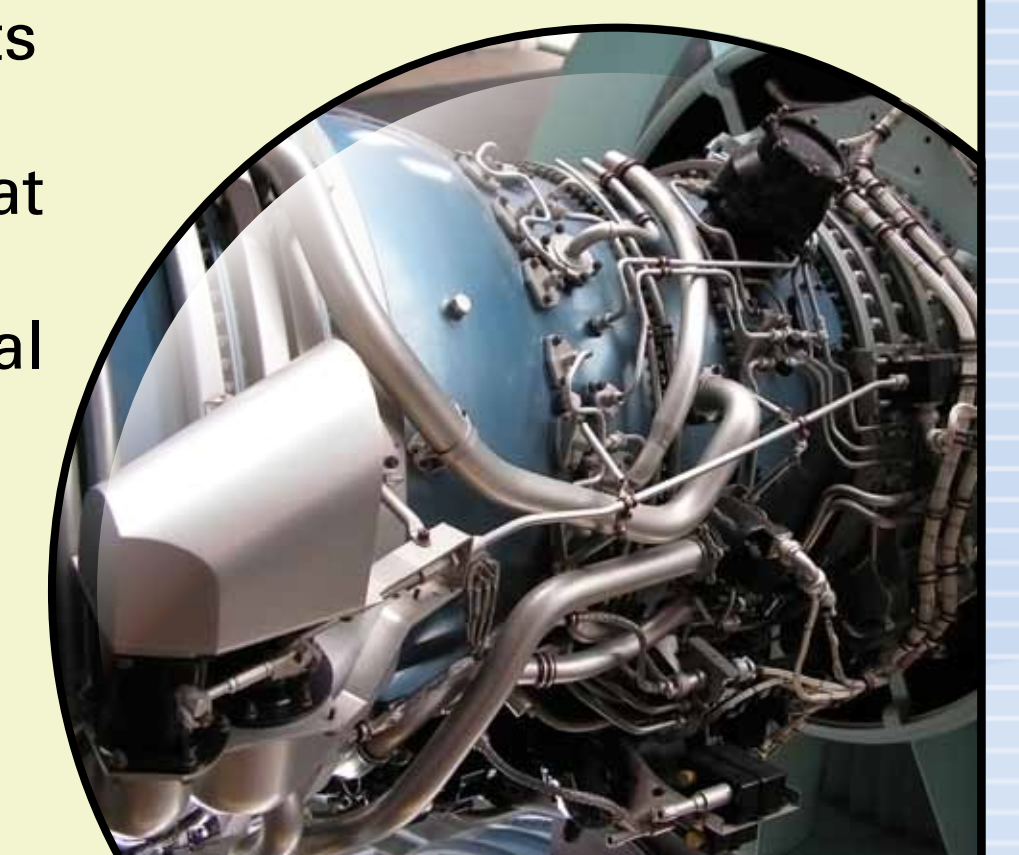


### Reliable measurements for functional materials

Metrology of electro-thermal coupling for new functional materials technology (NEW09)

#### Efficiency in transport, power generation and solid state cooling

The automotive, energy, and medical industries all require high temperature functional materials to increase efficiency. This project will develop reliable measurements of electro-thermal-mechanical coupling at high temperatures to support new functional material technologies and the products that use them.



Europe's National Measurement Institutes working together

The European Association of National Metrology Institutes (EURAMET) has implemented the European Metrology Research Programme (EMRP), a programme with a value of over 400 M€, organised by 22 NMIs and supported by the European Union.

Full details can be found at: [www.euramet.org](http://www.euramet.org)

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The EMRP is jointly funded by the EMRP participating countries within EURAMET and the European Union