

# European Metrology Research Programme



## Industrial Innovation

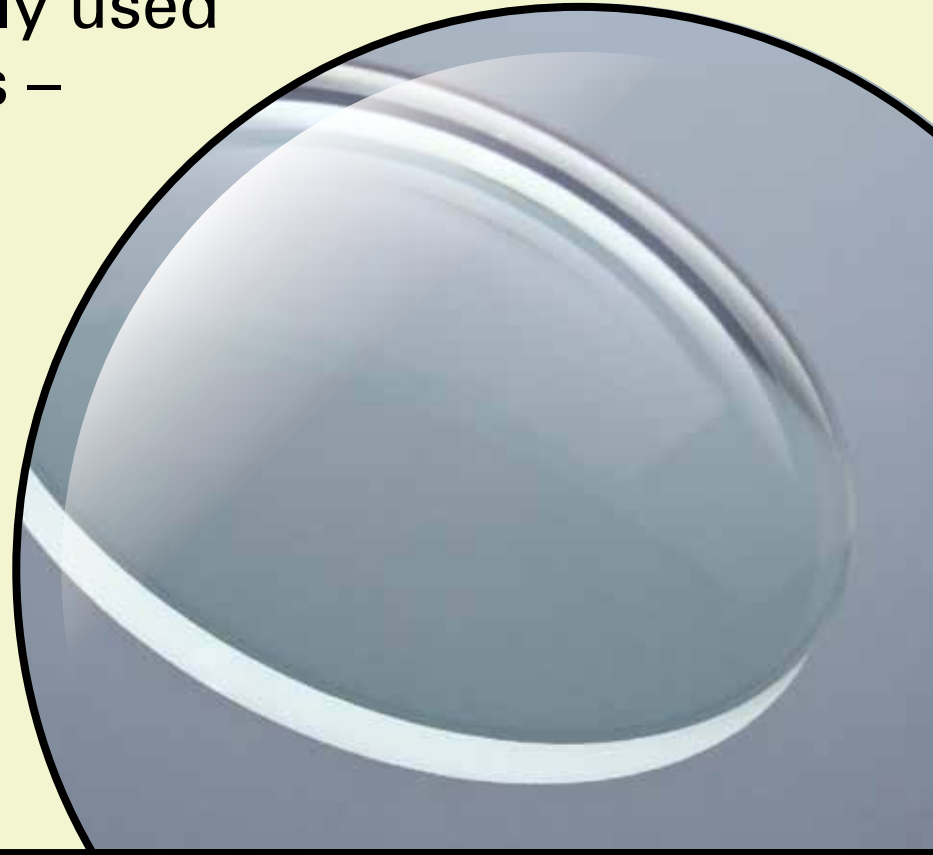
An overview of the funded projects from the EMRP Call 2010 – Industry

### Measuring optical curved surfaces

Optical and tactile metrology for absolute form characterisation (IND10)

#### Characterising free-form 3D surfaces

Measurements of 3D forms are important for characterising surfaces in the optics and precision engineering industries, as well as in astronomy and science. This project will create standards and will perform measurement comparisons to validate the two most commonly used 3D measurement types – imaging methods and single-point scanning.

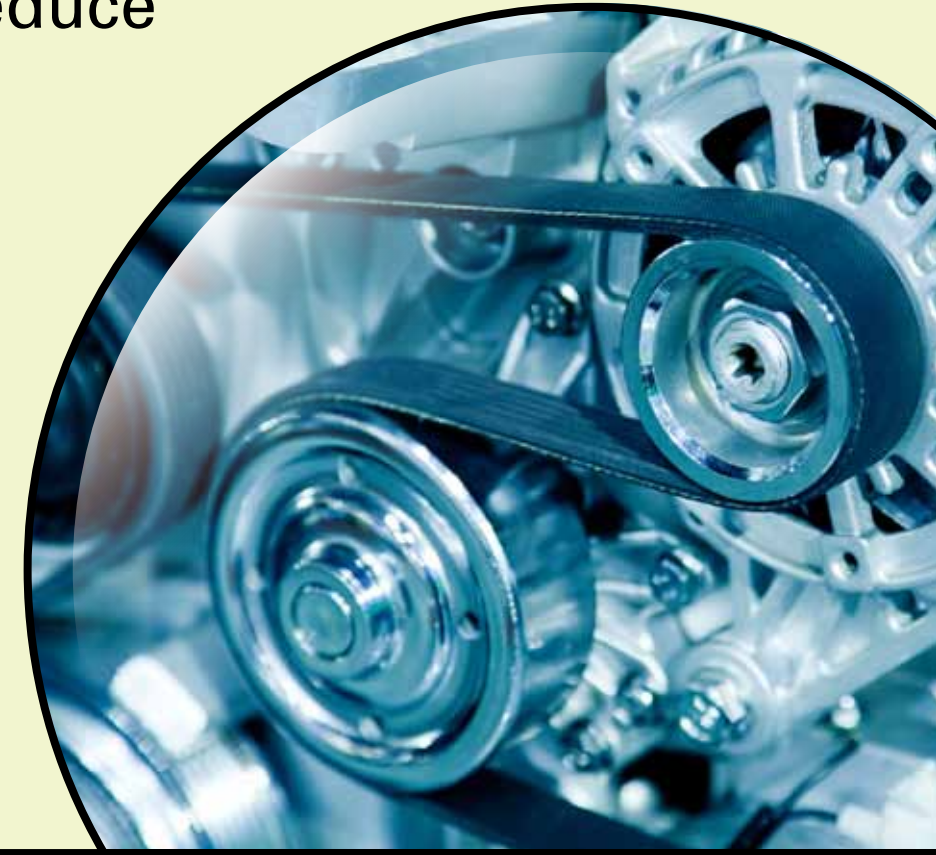


### Advanced assessment of engineered surfaces

Metrology to assess the durability and function of engineered surfaces (IND11)

#### Reducing wear and friction in components

Advances in surface engineering have helped to reduce losses caused by friction and wear of components. This project will develop macroscale to nanoscale measurements, for assessing engineered surfaces. This should increase component lifetime, reduce equipment downtime and improve industrial efficiency and sustainability.



### Understanding industrial vacuums

Vacuum metrology for production environments (IND12)

#### Improving vacuum measurements for better end-products

Vacuum has long been an important tool in industry and is still used today in modern lighting, the semiconductor industry and fusion power research. However, vacuum is poorly understood when used outside of the laboratory. Therefore, this project aims to improve vacuum measurements in conditions representative of those in industry.



### Stable and reliable measurement systems

Thermal design and time-dependent dimensional drift behaviour of sensors, materials and structures (IND13)

#### Measurement consistency with time and temperature

Material properties change with temperature and over time, reducing the reliability and performance of measurement devices. This project will use thermal modelling of a prototype measurement device to improve temperature control and thermal design and increase our understanding of measurement drift.



### Improving the accuracy of atomic clocks

New generation of frequency standards for industry (IND14)

#### Accurate atomic clocks for industry

This project will develop new standards to improve the stability of the high frequency atomic clocks used to provide satellite navigation systems and fast internet access. This should result in clocks becoming more stable, robust and portable, improve synchronisation between them, and enable higher speed data transfer.

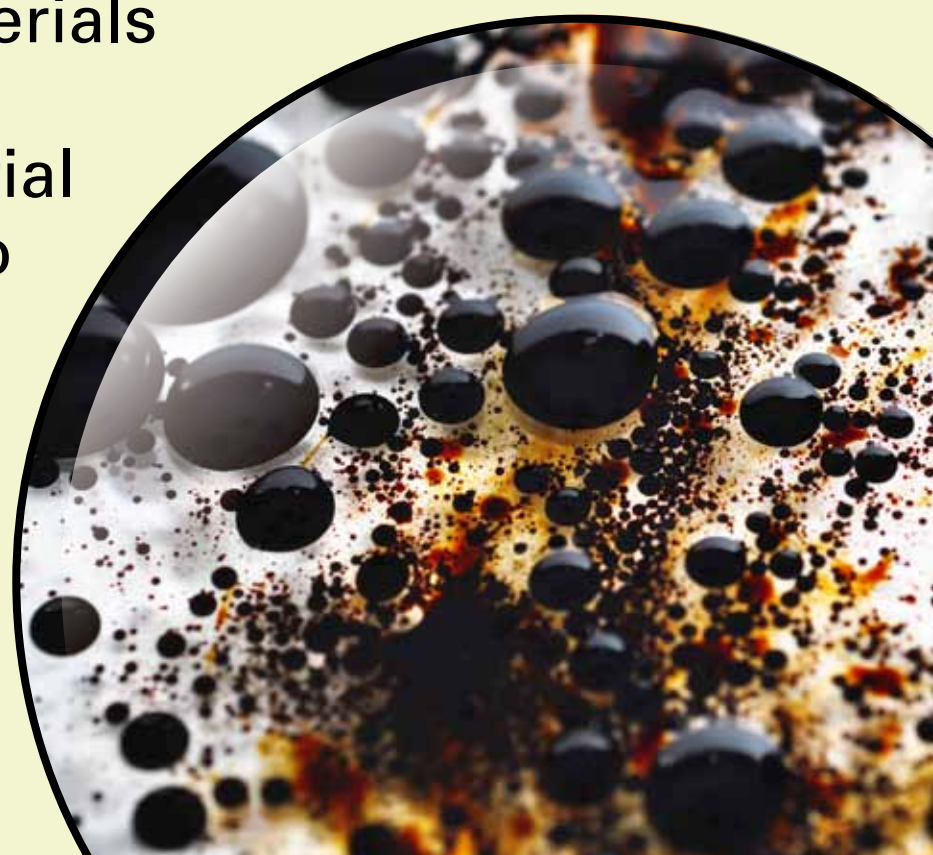


### Understanding chemical interactions at surfaces

Traceable quantitative surface chemical analysis for industrial applications (IND15)

#### Improving the speed and efficiency of industrial processes

Accurate chemical measurements at surfaces are vital for developing corrosion resistant materials, assessing the toxicity of medical implants and designing industrial catalysts. This project will develop reference materials and methods for the highest priority industrial applications, leading to savings in industrial costs and time.

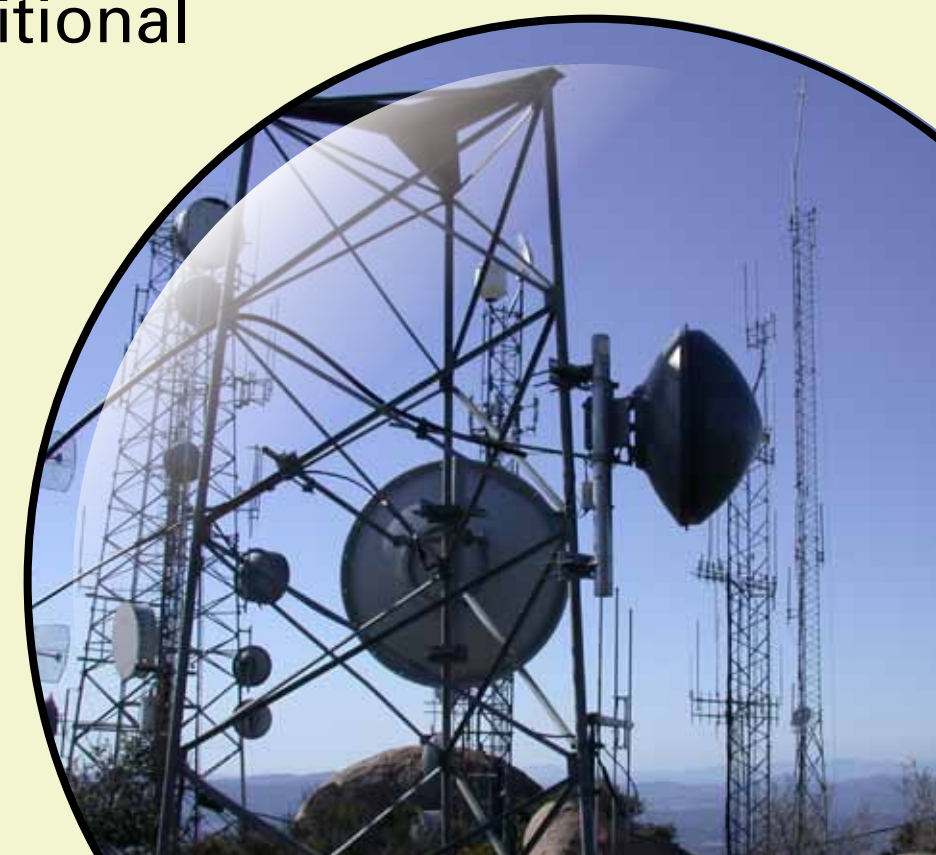


### Increasing frequencies for communications technologies

Metrology for ultrafast electronics and high-speed communications (IND16)

#### Enabling the efficient use of higher frequencies for communications

High-speed communications have developed rapidly, but as more systems go online, we need to increase the frequencies available for use. These higher frequencies need to be accurately measured, so that additional bandwidth is used efficiently. This project will develop these measurements.

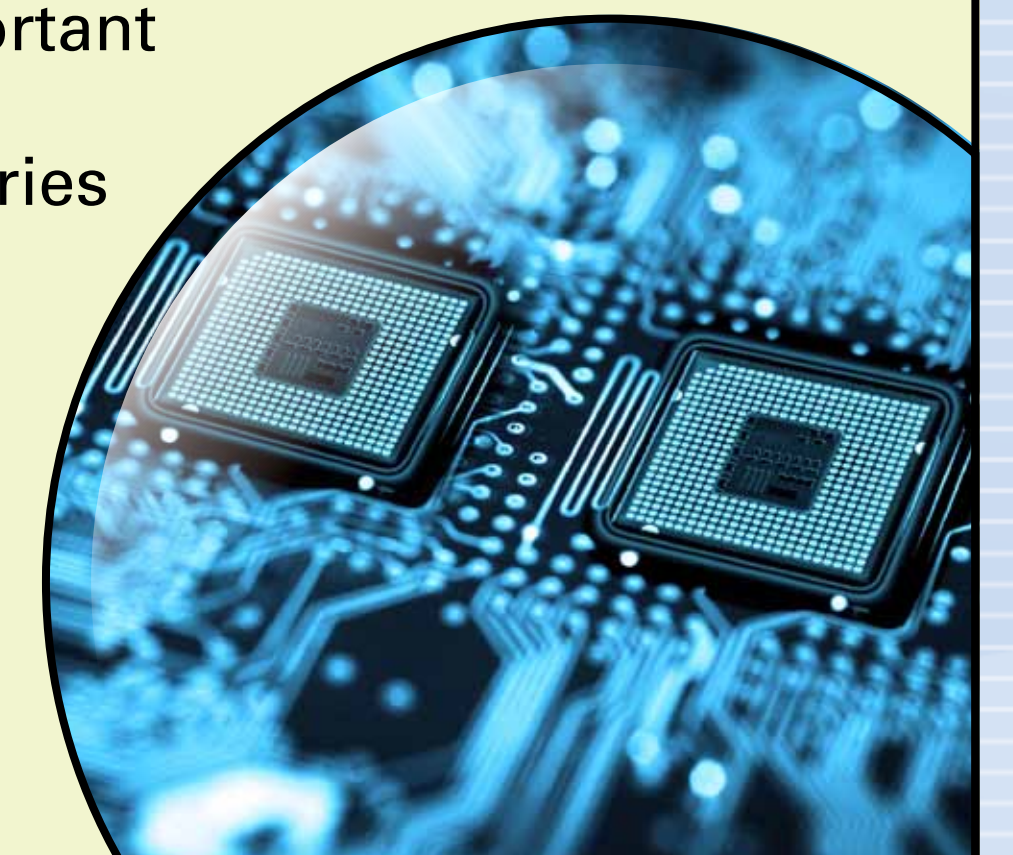


### Underpinning small structure measurement

Metrology of small structures for the manufacturing of electronic and optical devices (IND17)

#### Supporting the miniaturisation of technological components

This project will provide a reference standard to add traceability to scatterometric measurements and make them comparable to microscopic methods. This is important for the optical and semiconductor industries as they depend on component miniaturisation and reliable measurements of small structures.



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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