



## What is CMST?

# Chemistry and Molecular Sciences and Technologies

CMST has the mission to foster European expertise in discovering, understanding, producing and manipulating molecular species.

## In Detail

- **Chemistry for life:** a multidisciplinary collaboration between chemists, biologists, clinicians and agronomists in the design and development of new products for pharmacy, medicine, public health, and agriculture, including a more efficient and safe food production.
- **Manipulating molecular matter:** learn how to handle, synthesise and manipulate matter at the molecular level, understand and control its reactivity and function, develop new catalysts to control the shape, size and properties of the product molecules; move from single molecule chemistry to supra- and macromolecular chemistry, producing smart materials tailored for specific applications.
- **Energy production:** shifting from oil, natural gas and coal consumption to more efficient ways of using combustible fuels and investigate technologies based on renewable resources, in particular sunlight.
- **Caring for the planet:** continuous improvement of the standards of living by reducing the environmental impact of technology in order to establish a sustainable growth, develop clean technology for innovative production, ensure increasingly accurate means for quality control, mastering ground remediation, hazard control, preserving and maintaining cultural heritage.
- **Space understanding and exploitation:** rationalising processes occurring under extreme conditions in space and interstellar media, understanding processes occurring around spacecrafts, exploiting resources of stars and planets.

The examples illustrate actual research within this Domain. The scope of the Domain is not restricted to these activities. New ideas and initiatives are welcome as well as those with high interdisciplinary elements and close links and overlaps with other domains.

The research activities in this Domain aim to develop experimental, theoretical and analytical tools to enhance the development of chemical transformations, reactivity and function. CMST aims to apply such knowledge and innovation to industrial processes and production.

COST strives for a bottom-up approach to science networking.  
For more information, visit [www.cost.eu](http://www.cost.eu)

## Chair

### Prof. Dieter Schinzer

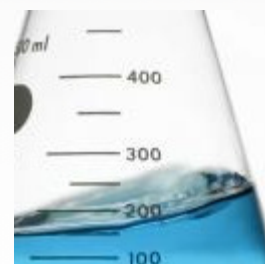
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## Current COST Actions within the CMST Domain:

- **CM0701** Cascade Chemoenzymatic Processes – New Synergies Between Chemistry and Biochemistry
- **CM0702** Chemistry with Ultrashort Pulses and Free-Electron Lasers: Looking for Control Strategies Through “Exact” Computations
- **CM0703** Systems Chemistry
- **CM0801** New Drugs for Neglected Diseases
- **CM0802** European Phosphorus Sciences Network (PhoSciNet)
- **CM0803** Functional Peptidomimetic Foldamers: from Unnatural Amino Acids to Self-Assembling Nanomaterials
- **CM0804** Chemical Biology with Natural Products
- **CM0805** The Chemical Cosmos: Understanding Chemistry in Astronomical Environments
- **CM0901** Detailed chemical Kinetic Models for Cleaner Combustion
- **CM0902** Molecular Machineries for Ion Translocation Across Biomembranes
- **CM0903** Utilisation of Biomass for Sustainable Fuels and Chemicals (UBIOCHEM)
- **CM0904** Network for Intermetallic Compounds as Catalysts for Steam Reforming of Methanol (IMC-SRM)
- **CM0905** Organocatalysis – ORCA
- **CM1001** Chemistry of non-enzymatic protein modification - modulation of protein structure and function
- **CM1002** CODECS: COntvergent Distributed Environment for Computational Spectroscopy
- **CM1003** Biological Oxidation Reactions - Mechanisms and Design of new Catalysts
- **CM1004** Synthetic Probes for Chemical Proteomics and Elucidation of Biosynthetic Pathways
- **CM1005** Supramolecular Chemistry in Water
- **CM1006** EUFEN: European F-Element Network
- **CM1101** Colloidal Aspects of Nanoscience for Innovative Processes and Materials
- **CM1102** Multivalent Glycosystems for Nanoscience - MultiGlycoNano
- **CM1103** Structure-based drug design for diagnosis and treatment of neurological diseases: dissecting and modulating complex function in the monoaminergic systems of the brain
- **CM1104** Reducible oxide chemistry, structure and functions
- **CM1105** Functional metal complexes that bind to biomolecules
- **CM1106** Chemical Approaches to Targeting Drug Resistance in Cancer Stem Cells
- **TD0802** Dendrimers in Biomedical Applications
- **TD0903** Understand and Manipulating Enzymatic and Proteomic Processes in Biomaterialization: Towards New Biomimetic Strategies, the Creation of Tailored Nano-scale Architectures and Environmental Monitoring
- **TD0905** Epigenetics: Bench to Bedside
- **TD1003** Bio-inspired Nanotechnologies: from concepts to applications
- **TD1004** Theranostics Imaging And Therapy: An Action To Develop Novel Nanosized Systems For Imaging-Guided Drug Delivery
- **TD1102** Photosynthetic proteins for technological applications: biosensors and biochips (PHOTOTECH)

## Success Stories

**COST Action D29** Sustainable/Green Chemistry and Chemical Technology responds to worldwide demand for greener chemical processes. This project was particularly successful as it has expanded COST's geographic scope by involving chemists from Ethiopia.

**COST Action D27** Prebiotic Chemistry and Early Evolution set up the first European research network on prebiotic chemistry, origin of life and early evolution capable of interacting at an international level and in a competitive way.

## How to join a COST Action

Scientists interested in joining an ongoing COST Action should contact the Action Chair and the COST National Coordinator in their member country ([www.cost.eu/cnc](http://www.cost.eu/cnc)).

To propose a new Action, visit: [www.cost.eu/opencall](http://www.cost.eu/opencall). COST assesses new proposals two times a year.



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