

EMMI's Research Fields

EMMI is active in multifunctional materials research.

Our current research activities include the following topics:

- multiferroics
- polymers
- heterogeneous catalysis

- ferroelectrics
- coatings
- photocatalysis

- piezoelectrics
- solid state ionics
- photovoltaics

- photoactive materials
- biomaterials
- nano-materials

- sensors and actuators
- composites
- metamaterials

At the origin of our network was the idea to bring together the research communities of functional ceramics and organic-inorganic hybrid materials. This combination has resulted in many interesting ideas and projects, for example ferroelectric polymers and ferroelectric nanograins in hybrid ORMOCER® layers.

Equally fruitful is the collaboration between experimentalists and experts in computer modelling, in particular modelling of size-driven properties in nano-objects.

As is most of today's materials science, EMMI's research is characterised by its interdisciplinarity, with research from backgrounds in medicine, biology, chemistry, physics, electronics engineering and other disciplines.

In many of our projects environmental issues play an important role. New materials and devices can lead to reduced power consumption, replace toxic components, allow development of hyper-sensitive gas sensors etc.

EMMI covers a large range of techniques in Materials Processing, for example:

- thin film deposition (sputtering, chemical routes, monolayers)
- sol-gel processing
- plasma technology for surface modification, polymerisation etc.
- self assembly technologies
- nano-powders
- supercritical fluids
- ... and others