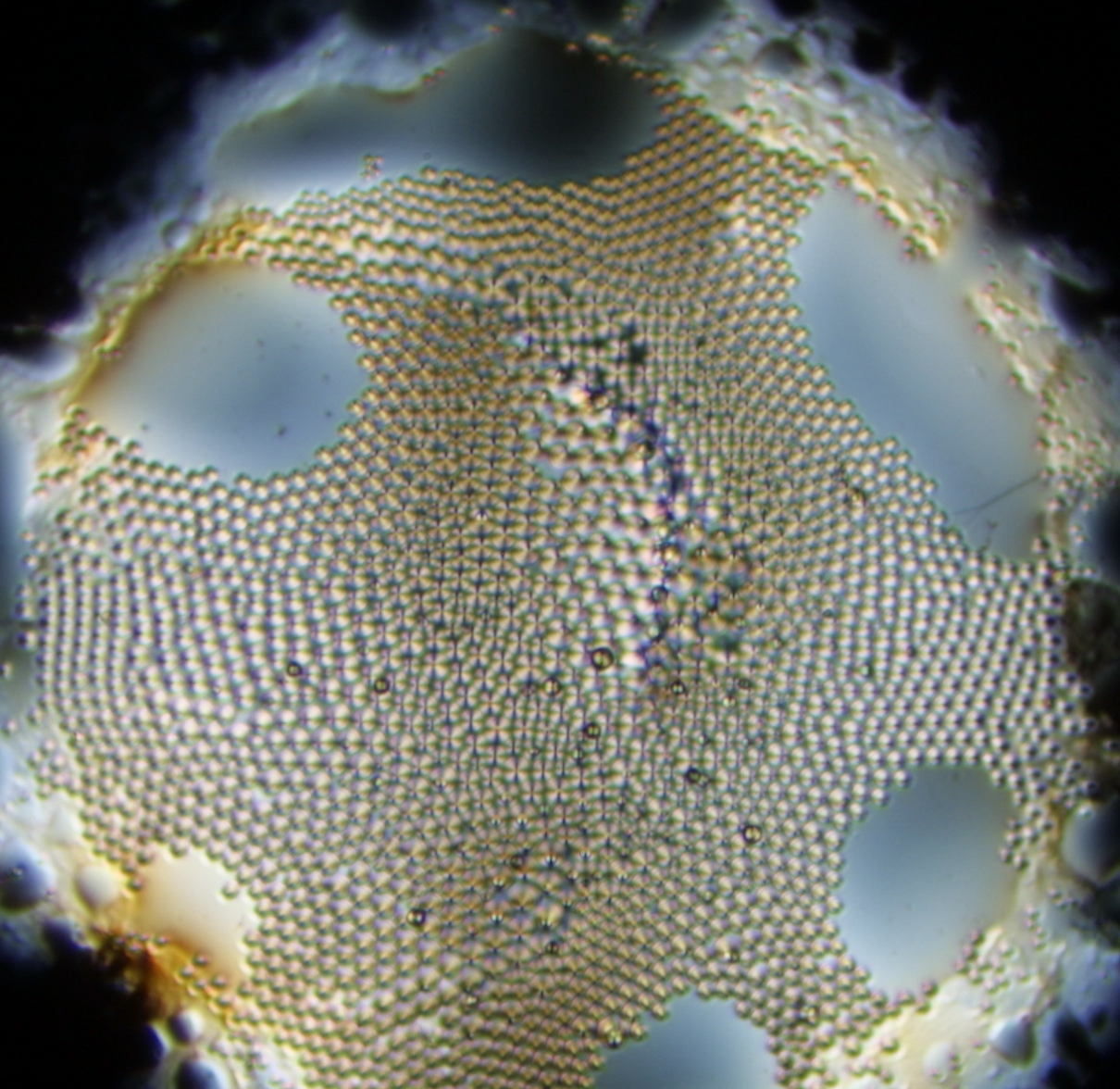
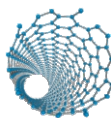


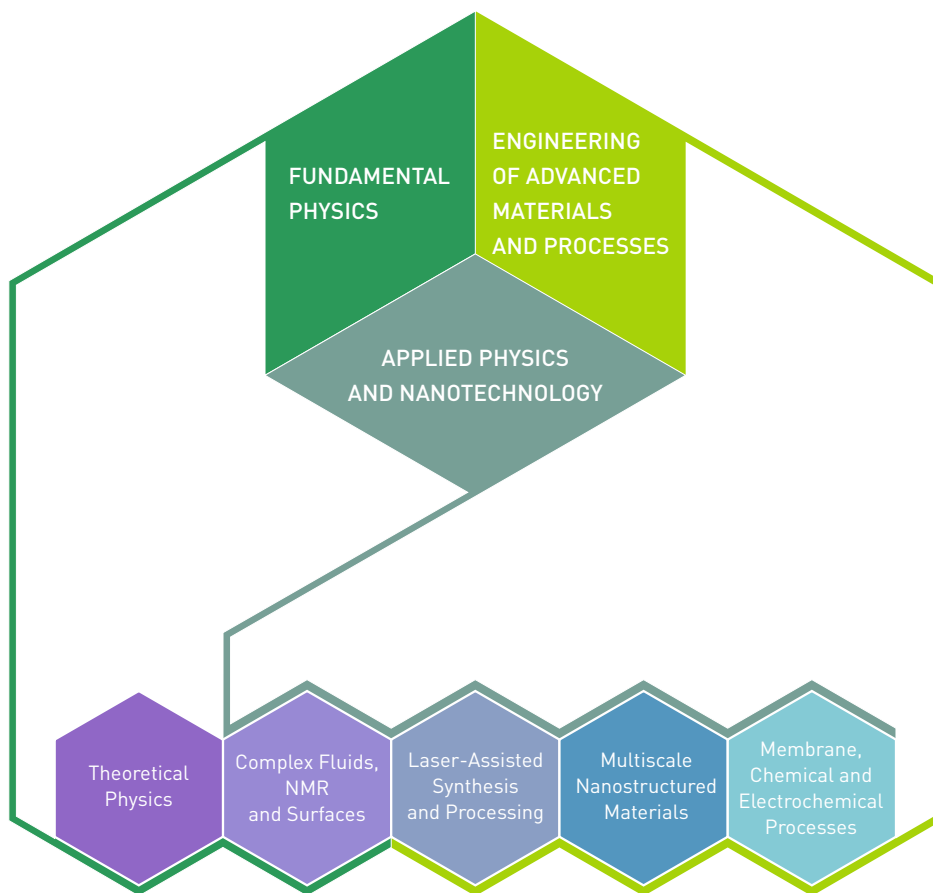
Center of Physics and Engineering of Advanced Materials



TÉCNICO
LISBOA



CeFEMA



CeFEMA Mission

- Advancing materials science and engineering by carrying out theoretical and experimental research to the highest international scientific standards
- Carrying out advanced education and training of young researchers at the highest scientific level
- Promoting knowledge transfer, and applying this knowledge to regional, national and international development
- Pursuing industrially-oriented projects and technology transfer to industry
- Establishing itself as a reference centre for research in selected thematic areas



*“Any fool can make things bigger,
more complex...*

*It takes a touch of genius – and
a lot of courage – to move
in the opposite direction.”*

Albert Einstein

INTERDISCIPLINARY RESEARCH COOPERATION

KEY ENABLING TECHNOLOGIES

APPLICATIONS & TECHNOLOGY TRANSFER



MATERIALS & STRUCTURES

- Superconducting / ferroelectric
- Metal / insulators / insulators heterostructures
- Nanostructured materials
- Optical materials

SIMULATIONS

- FFE phase transitions and their relaxation to equilibrium
- FFE non-linear laser excitation processes

EXPERIMENTAL TECHNIQUES

- Temperature quenches
- Electric and magnetic field perturbations
- Tightly focused laser beams
- High resolution SEM and TEM

INFORMATION AND COMMUNICATION TECHNOLOGIES

- Nanoelectronics
- Photonics
- Superconductors

ENERGY CONVERSION & ENVIRONMENT

- Thermoelectrical devices
- Sensors
- Energy storage and solar cells

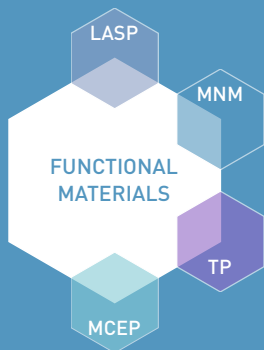
HEALTH

- Drug delivery
- Osseointegration

INTERDISCIPLINARY RESEARCH COOPERATION

KEY ENABLING TECHNOLOGIES

APPLICATIONS & TECHNOLOGY TRANSFER



SYNTHETIC MEMBRANES

- Polymeric
- Mixed matrix
- Bio and hemocompatible
- Tunable surface functionality

NANOSTRUCTURED MATERIALS

- Energy storage
- Energy conversion
- High temperature
- Self-lubricated

BIOCOMPATIBLE MATERIALS

- Multimaterials biocompatible constructs
- Materials resistant to wear / corrosion in bodily fluids

ENVIRONMENT

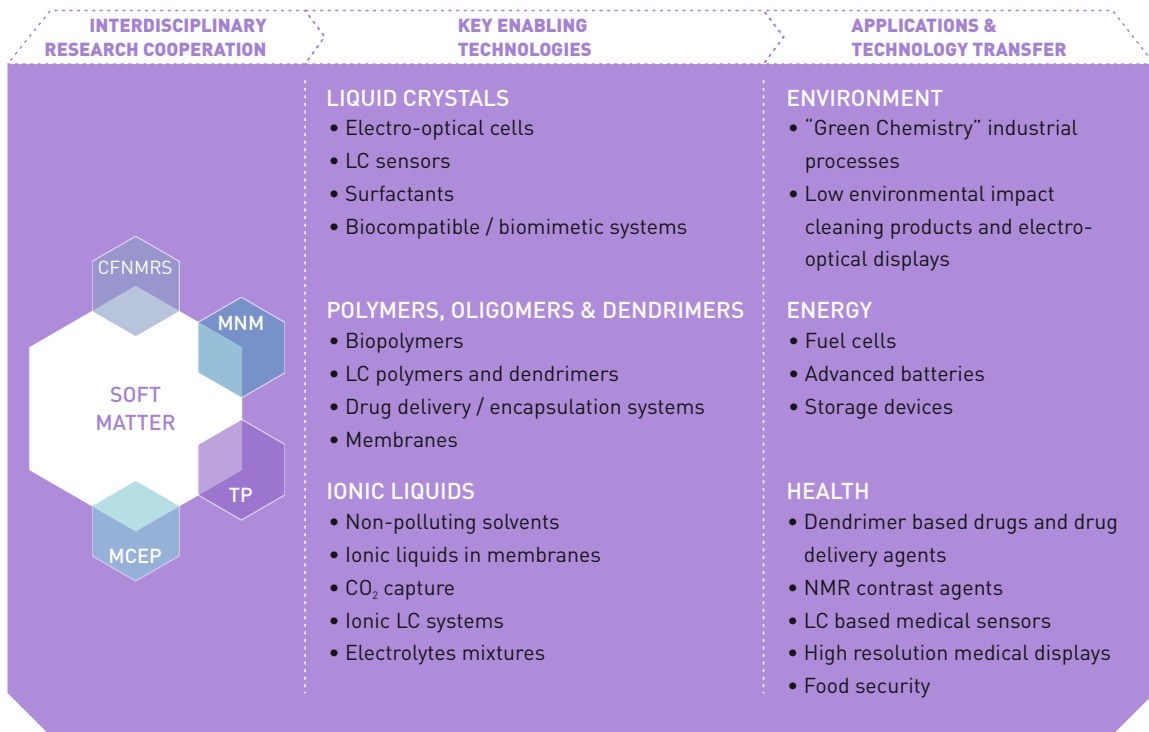
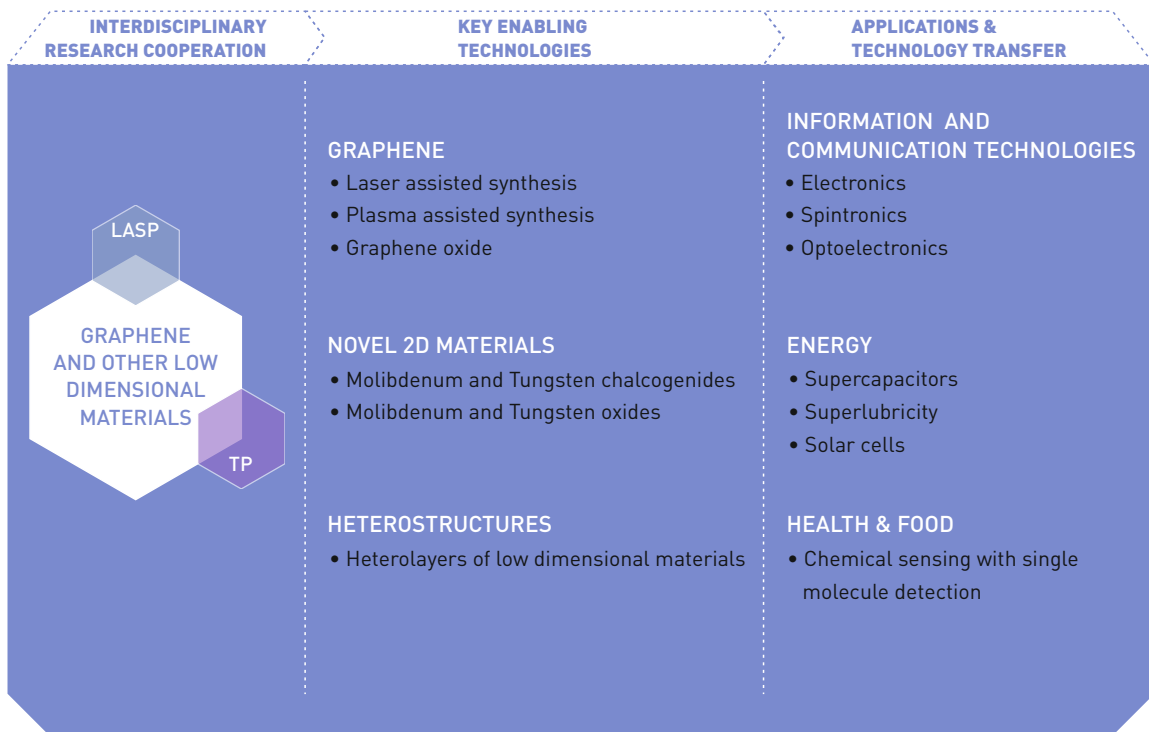
- Efficient and intensive membrane-based industrial processes
- Electrochemical processes for wastewater treatment

ENERGY

- Fuel cells and advanced batteries
- Electrolysers for H₂ production
- Thermoelectrical devices
- Lightweight materials for low cost transportation
- Materials for extreme heat and radiation conditions

HEALTH & FOOD

- Bio and hemocompatible membrane-based artificial organs
- Prosthesis and dental implants
- Membrane applications in functional foods and nutraceuticals



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