



Interdepartmental Center for Materials Science and Engineering



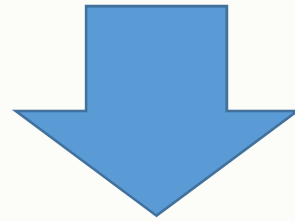
University of Pisa

Some history....

On 1989, in the framework of the **Engineering** Faculty, the Center for Material Engineering (CIIM) was founded, regrouping the Department of Mechanical and Nuclear Engineering, The Department of Aerospace Engineering and the Department of Chemical Engineering, Industrial Chemistry and Materials Science. The first director was Prof. Vittorio Frosini, then Prof. Salvatore Lanza, Prof. Roberto Bassani, Prof. Luigi Lazzeri and Prof. Andrea Lazzeri. The center was disactivated on 2012.

In the meanwhile, in the last two decades, some other initiatives inside the University of Pisa were attempted, such as the regional laboratory POLYLAB, involving the **Science** Faculty and INFIM, and also CIBE (center for biomaterials and endoprosthesis).

- Necessity of a continuous exchanging information between engineering and science in order to better exploit the results of research activity thanks to the full understanding of processes and properties of materials
- Necessity of integrating competences, skills and instrumentation for being more competitive on an European scale



2013



Interdepartmental Center on Material Science and Engineering

9 DEPARTMENTS:

- ENG
 - Department of Civil and Industrial Engineering (20 members)
 - Department of Energy, Systems, Territory, and Construction Engineering (5 members)
 - Department of Information Engineering (13 members)
- SCIENCE
 - Department of Chemistry and Industrial Chemistry (13 members)
 - Department of Geosciences (18 members)
 - Department of Physics (5 members)
 - Department of Biology (8 members)
- MEDICINE
 - Department of Surgical, Medical, Molecular and Critical Area Pathology (6 members)
 - Department of Translational Research and of New Surgical and Medical Technologies (1 member)

90 members

Activities

- Education
- Research in the field of material science (materials preparations, properties, applications)
- Services to industry

OBJECTIVES

- Conducting high quality research in the framework of material science
- Applying the research results to obtain products with a high added value and a high content of innovation



OBJECTIVES

- Coordinating initiatives of the different departments about Materials Science and Engineering
- Favouring the creation of multidisciplinary and interdepartmental teams aimed at developing research and education activity
- Promoting and transferring the research results
- Supporting the industry aimed at developing new materials or replacing the old ones for achieving better performances or health/environmental goals in final products
- Offering an integrated research infrastructure for solving complex problems in the easiest way

- Offering an education standard to young students/researchers close to current applications for favouring their placement in industry or research centres both on a local and global scale
- Organizing occasions for peculiar topics focusing, such as conferences or workshops

SOME TOPICS ACTUALLY DEVELOPED BY CISIM

Engineering

- Preparation and properties of ceramic matrix composites
- Preparation and properties of polymer composites and nano-composites
- Employment of materials and polymers from renewable resources and recycling
- Energetic polymers and storage of hydrogen through the synthesis of $\alpha\text{-AlH}_3$
- Bituminous materials for asphalts
- Metal alloys

- 
- Testing methods for mechanical properties of materials for structural and aerospace applications
 - Tissue engineering
 - Tribology and biotribology
 - Microstructural and damaging analysis
 - Geomaterials
 - Natural based material and innovative building structures
 - Electronic and robotics applications
 - Electromagnetic devices
 - Biomedical devices

Chemistry

Photochromic and photoactive materials;

Preparation of solid solutions of metal oxides / Synthesis and structural characterization;

Study of binders and binder interactions with pigments in cultural heritage materials by thermal analysis;

Physico-chemical characterization of ultrasmall superparamagnetic nanoparticles;

Structural studies of loaded halloysite nanotubes;

- Study of phase properties of materials, miscibility in heterogeneous systems and molecular dynamics of materials
- Study of the electro-optical response of polymers towards external stimuli (temperature, light, stretching)
- Green and cheap new industrial catalysis: Solvothermal and microwave-assisted nanocatalysts syntheses (mainly based on Pd, Ru, Pt, Cu, Rh)
- Catalytic conversion of renewable resources (sugars and lignocellulosic biomass) into chemical intermediates for material synthesis
- Techniques and advanced methods for the environmental analysis (impact of materials onto environment)

Physics

- NANO-LAB: SCANNING PROBE MICROSCOPY AND NANO-OPTICS (nano- and micro-spectroscopy of fluorescence emission; near field optical investigations of optical active materials; surface roughness and tribology of micro-machined workpieces)
-
- Dynamics of Soft Matter Lab (dynamics of thin polymer films; kinetics of polymerization; molecular dynamics at high pressure; secondary relaxations in the glassy state; stability of amorphous state; cryoprotectants fluids; bioprotection; High frequency electromagnetic properties of materials; transport in porous materials
- Laboratory “Heterogeneities and Dynamics on Different Time-Length-Scales in Soft Matter” (Glass Transition; Dynamics and Relaxation at Nanosecond and Nanometer Scales; Structural Relaxation and Aging; Mechanical Testing and Characterization of Advanced Materials, Applications of Microwave Radiation to Industrial Processing, Linear Viscoelastic Behavior of Polymers, Dosimetry, Identification, and Decay of Free Radicals Generated in Materials via ESR Spectroscopies, Microwave Techniques in Consolidation of Marble and Other Materials)

geosciences

- Study of calcium silicates and their thermal behaviour;
- Zeolites and zeolites-like materials;
- Structural determination on material with OD (order/disorder) nature;
- Crystallo-chemical study on rocks minerals

biology

- Natural materials from plants and organisms
- Effects of materials on cells behaviour

medicine

- Materials and devices applications in the cardiovascular sector.
- Materials for surgery and controlled release
- Materials applications in the orthopaedic sector

CISIM WEBSITE

www.cisim.unipi.it

The screenshot shows the CISIM website homepage in a browser window. The browser's address bar displays "cisim.hosting.unipi.it". The website header includes the CISIM logo, the text "in Scienza e Ingegneria dei Materiali", and "UNIVERSITÀ DI PISA". A navigation menu contains "HOME", "FACILITIES", "PEOPLE", "PROJECTS", and "ABOUT". A search bar is located on the right side of the header.

Below the header is a banner for "Aste esplosive Offerte Pazzesche" with several product listings:

Product	Price	Savings
iPad mini 16GB	Venduto: 21,61€	Risparmia: 93%
KitchenAid Mixer	Venduto: 25,91€	Risparmia: 94%
Samsung TV LED 40"	Venduto: 72,43€	Risparmia: 91%
Dyson DC29	Venduto: 26,65€	Risparmia: 90%

Below the banner are four images: a round-bottom flask with yellow liquid, a microscopic view of particles, a scientist in a lab coat and mask, and a scanning electron microscope image of a porous material.

The main content area is titled "HOME PAGE" and includes the CISIM logo and a description: "CISIM is an interdepartmental Materials Research Science and Engineering Center at Pisa University with a mission: to foster collaborative, interdisciplinary research and education in the science and engineering of materials. CISIM promotes collaboration among UNIPI faculty and between UNIPI faculty and researchers of other universities, industry, and government laboratories."

There is a login section with fields for "Nome utente" and "Password", a "Login" button, and a "Ricordami" checkbox. A "Password dimenticata?" link is also present.

The footer contains contact information: "CISIM - Università di Pisa - Lungarno Pacinotti 43 - 56126 Pisa - P.I. 00286820501 - C.F. 80003670504".

Temporarily at: <http://cisim.hosting.unipi.it/>

COORDINATOR

PROF. ING: ANDREA LAZZERI

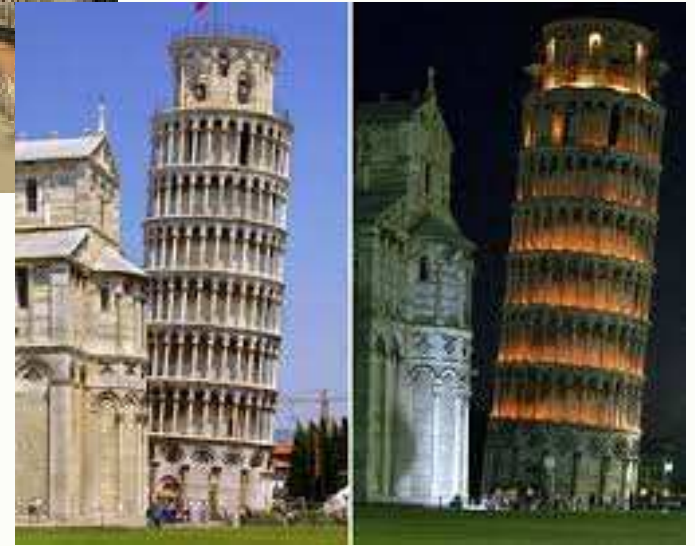
Tel. : +39-0502217807

Fax: +39-0502217807

E-mail: a.lazzeri@ing.unipi.it

Address: Via Diotisalvi 2, 56126, Pisa, Italy





Thank you for your attention

