



Education and Research in Nanotechnology in *The Gheorghe Asachi* Technical University of Iasi

Vice-Rectorate for International Relations and University Image

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The "Gheorghe Asachi" Technical University of Iasi – Romania

www.tuiasi.ro

11 Faculties:

Automatic Control and Computer Engineering

Chemical Engineering and Environmental Protection

Civil Engineering and Building Services

Machine Manufacturing and Industrial Management

Electronics, Telecommunications and Information Technology

Electrical Engineering

Hydrotechnical Engineering and Environment Engineering

Mechanical Engineering

Materials Science and Engineering

Textile, Leather Engineering and Industrial Management

Architecture

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- According to many public rankings our university is considered:
 - the second technical university in Romania and
 - the fifth one in the general (inclusive) list of universities in Romania.
 - Our main objectives and trends in the field of nanotechnology are commensurate with the credit the Romanian and international scientific community grant us.

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Key figures

(academic year 2007-2008)

- ❑ 12 964 Undergraduate Students
- ❑ 2192 Master Students
- ❑ 1297 Ph.D. Students
- ❑ 218 Foreign Undergraduate, Master and Ph.D. students
- ❑ 47 Erasmus incoming students (2010)

Key figures

(academic year 2007-2008)

- 43 research centers and laboratories
- 450 research contracts (2008)
- over 40 international programs
- University staff:
 - 856 teaching staff
 - 642 administrative staff

Some of the main directions of research, in nanotechnologies, in our University

- Mathematical modeling of nanoparticles behavior
- AI methods in the design of nanomaterials
- Physics of nanoparticles, e.g.:
 - films prepared by electrodeposition,
 - auto-organisation phenomena,
 - thermal phenomena studies,
 - electro-magnetic phenomena in nanoparticles – see below, optical properties

List primarily based on the visibility obtained on Google Scholar by the published papers.

Some of the main directions of research, in nanotechnologies, in TU Iasi

- ❑ Chemistry of nanoparticles: synthesis, Stability of nano-/micro-sized particles,
- ❑ Chemistry of nanoparticles: photo-processes, photochromic behavior
- ❑ Chemistry of nanoparticles: applications, e.g., clays with tailored textural properties
- ❑ Metallurgy of nanoparticles: including nanomaterials in materials

Some of the main directions of research, in nanotechnologies in TU Iasi

- ❑ Electrotechnical properties of nanoparticles, conductivity, magnetic properties
- ❑ Tribometric properties, applications for sliding and rolling friction
- ❑ Bio-compatibility effects of nanoparticles
- ❑ Applications in medicine and pharmacology
- ❑ Devices based on nanotechnology, e.g., Neon atoms nanotubes as 1D quantum registers
- ❑ Textile industry applications
- ❑ Control systems for nano- and micromanipulators

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Education

- The education and research interests in nanotechnologies in our university range cover virtually all the 11 faculties.
- Some of the most active faculties in the field are Material Science and Technology Faculty, Faculty of Chemistry and Environment Sciences, Faculty of Electrical Engineering, Faculty of Electronics, Communications, and Information Technology, Faculty of Mechanics, Faculty of Electrotechnics, and Faculty of Textiles.

Education

- Chapters related to nanotechnology and its applications are taught in various courses:
 - chemistry-, physics-, and environment-related courses,
- while applications are taught in classes related to:
 - mechatronics, metallurgy, electrotechnics, textiles, medical electronics, tribology, and control.

Trends

- The increasing of the research potential in all the departments, from Chemistry to Physics to Textiles to Metallurgy to Electronics.
- Extending the research collaborations with the other major universities and research institutes in Iasi, including AL.I. Cuza University, University of Medicine and Pharmacy, University of Agronomic Sciences, National Research Institute of Physics, P. Poni Institute of Macromolecular Chemistry etc.
 - A strong collaboration already exists; many international-level papers are jointly co-authored by scientists from these universities.
- Extending the collaborations with other major Romanian universities.

Trends

- The increasing of the research and education cooperation with major European universities and research centers.
- The increasing of the collaboration with companies inside and outside Romania, especially in the fields where we already have competences and major laboratories.
- Collaborations envisaged include, but are not limited to the research in the physics and chemistry of nanomaterials, metallurgy of nanomaterials, electrotechnical, pharmacological, medical, mechatronics, and electronic applications.

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engineers

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