

Chemistry Department Torino University



Department
Chemistry

UNIVERSITÀ
DI TORINO

2023 - 2027
**DEPARTMENT
OF EXCELLENCE**
Ministero dell'Università e della Ricerca





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THE DEPARTMENT



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Staff

About **300** people, including professors, researchers and technicians work at the Chemistry Department of Torino University. PhD students and post-doc fellows are half of the whole [staff](#).



Students

The educational activities of the Department involve about **2000** students

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OUR VISION

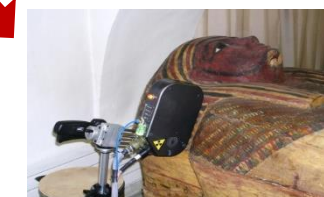


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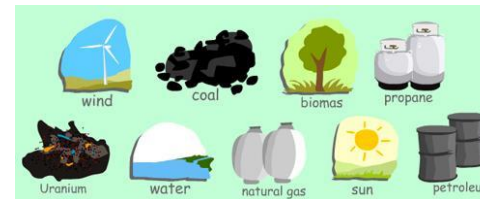
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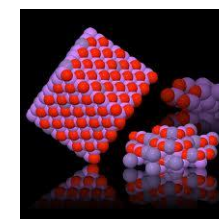
New clean technologies



Cultural heritage
protection



Better use of natural resources



Innovative materials

➤ **KEY FACTOR** to improve everyday life (for instance, health, novel clean technologies, etc.)

➤ **LEADING ROLE IN THE ECONOMIC GROWTH** not limited to the industrial sector (for instance, increase of the manufacturing productivity, quality and safety of products, reduction of industrial and urban waste, etc.)

➤ **PROMOTER of the ECOLOGIC TRANSITION** towards a cleaner future (for instance, rapid decreasing and elimination of gas emissions highly harmful for living beings and the environment)

➤ **CONNECTION** between linear and circular economy, being able to make our society stronger and more sustainable

➤ **GLOBAL SCIENCE** overcoming traditional borders between disciplines and industrial sectors

CHEMISTRY as:

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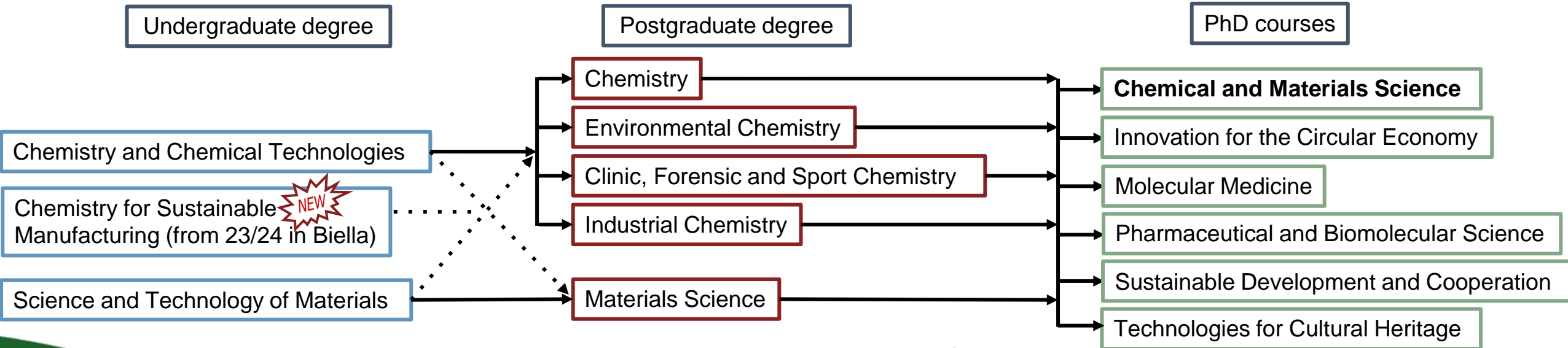


EDUCATIONAL ACTIVITIES



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Thought for:

- supplying **basic and advanced training** for all the chemical disciplines
- following the **highest international standards**
- meeting with **social and industrial needs of the territory** indicated by local stakeholders
- guaranteeing **occupation of graduate students in largely diversified companies and services**

INSTRUMENTS

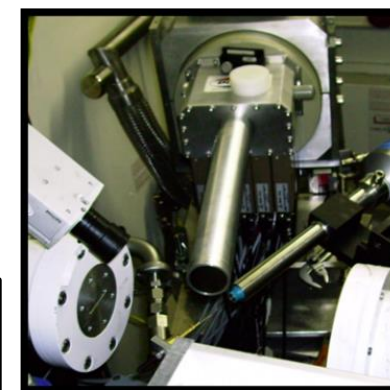
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The Chemistry Department - together with each research group - possesses and manages **CUTTING-EDGE INSTRUMENTS FOR SEVERAL MILLION EUROS**

- Synthetic structures
- Vibrational and electronic Spectroscopies
- **Magnetic Resonance Spectroscopies**
- Ultra-high resolution transmission microscopy (HRTEM)
- **Scanning electron microscopy equipped with field emission gun (FE-SEM)**
- **X-Ray Diffractometer**
- Chromatographies
- **Mass Spectrometer Orbitrap**
- **High Performance Computational Workstations OCCAM**
- Laboratories for students



- **2023 upcoming instruments:**

- High-Resolution mass spectrometer coupled with Liquid Chromatography (UHPLC-MS/MS)
- Inductively coupled plasma-mass spectrometer (ICP-MS/MS)

RESEARCH & COLLABORATIONS



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Research funds: total budget of about **7.5 M€/yr** (2018-2020). The main funding sources are:

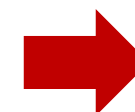
Projects:

- **UE PROJECTS** → 20
- **OTHER INTERNATIONAL PROJECTS** → 6
- **NATIONAL PROJECTS** → 80

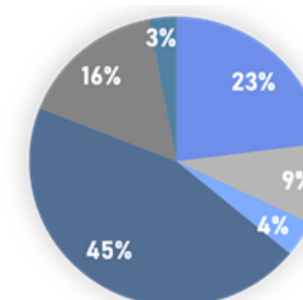


Private sector: average budget **2 M€/yr** from collaborations with companies during 2018-2020.

3 spin-offs



>100 active contracts



■ private sector
■ Piedmont region
■ national
■ Europe
■ UniTo
■ others



3 patents/yr (on average)

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PUBLIC ENGAGEMENT

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ACTIVITIES FOR NON-SPECIALIZED AUDIENCE

The Chemistry Department organizes and participates to activities involving citizens through events of **public engagement:**

- Theater and Science
- The magic of chemistry
- Conferences before dinner
- Chemistry Museum
- [ApertaMenteChimica](#)
- U-NIGHT (Researchers' Night)



ACTIVITIES FOR SCHOOL

The activities are available by reservation:

- Laboratories and conferences in the schools
- Four days at the University
- Girls and boys. One day at the University
- Educational meetings on science didactics
- Connecting secondary school with higher education (PLS programme)



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A SHOWCASE ON RESEARCH AND POSSIBLE COLLABORATIONS



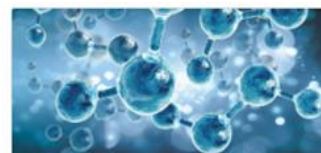
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The research at the Department



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CHEMISTRY AND HEALTH

People's health and quality of life are the basis of an active and dynamic society. Knowledge of human metabolism, as well as development of new medicines, innovative...

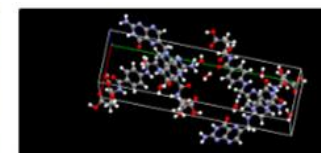
[more about →](#)



ADVANCED MATERIALS

Our everyday life is strongly influenced by materials: transportation, recreation, clothing, health, food production, security. To discover, produce and characterise new materials...

[more about →](#)



COMPUTATIONAL CHEMISTRY

Using computational clusters and powerful programs, computational chemists can predict the motions, reactivity, aggregation and formation of complex molecules up to predict their...

[more about →](#)



CHEMISTRY AND ENVIRONMENT

Chemistry plays a central role not only in describing and understanding environmental processes, but also in allowing the achievement of a correct balance between human activities...

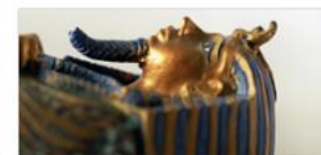
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GREEN CHEMISTRY

Chemistry can and must provide knowledge and technologies for the sustainable management of resources and lifestyles. With a reversal of perspective, as a voracious consumer...

[more about →](#)



CULTURAL HERITAGE

The study of the archaeological, historical and artistic heritage, as all the cross-disciplinary researches, generate a huge added value, both cultural and socio-economics. This is...

[more about →](#)



CHEMISTRY AND FOOD

Today food paradigmatically represents the complexity and interconnectedness of knowledges where themes such as health, education, culture and enhancing the excellence of local...

[more about →](#)



ENERGY

Clean, renewable, low cost and sustainable energy distribution to people all over the world is nowadays one of the most demanding challenges to mankind.

[more about →](#)



CHEMISTRY AND EDUCATION

Scientific skills are fundamental for the culture itself, the self-care, sight on issues of great social, environmental and ethical relevance for all scientists, stakeholders and...

[more about →](#)

WHAT IS THE VISION EMBODIED WITHIN THE PROJECT OF EXCELLENCE?



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The winning project [Chemistry 4.0: Molecules and Materials for Tomorrow](#)

[Society](#) (**CH4.0**) is among the 180 projects selected in whole Italy

- The project [CH4.0](#) (funded for more than 9 M€) will be developed in five years and aims to:
 - ✓ permanently link the evolution of knowledge in the chemical sciences with the main technologies of the digital transition underway
 - ✓ direct impact on the realization of the ecological and energy transition (also within the Piedmont area)
 - ✓ create a new know-how through the combination of experimental chemistry and the most recent digital revolution

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Only 11 projects have been funded by the Ministry of University and Research within the Group of Academic Recruitment Field of Chemical Sciences!

CONTACTS



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Thank you!