RESEARCH ACTIVITIES

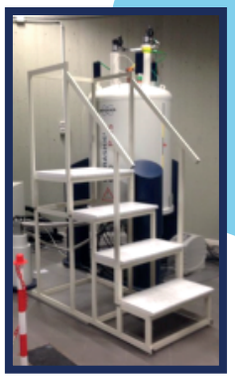
The research groups at the Department of Chemical Sciences hosting the PhD students are equipped with laboratories suitable for carrying out research activities ranging from synthesis to characterization in different disciplines, covering: **biochemistry, computational chemistry, physical chemistry, industrial chemistry, organic chemistry, inorganic chemistry, peptide chemistry, chemistry of proteins and nucleic acids, catalysis, polymer science and nanostructures.**

EQUIPMENTS

Confocal Microscope Zeiss Axio Observer Z1

Advanced instrumentations for spectroscopy, microscopy, structural and biophysical characterization of molecules, mass spectrometry are available at the Department of Chemical Sciences.

Transmission Electron Microscope (TEM) TECNAI G2 S-TWIN



Nuclear Magnetic Resonance spectrometer 600 MHz Bruker

USEFUL LINKS

Polytechnic and Basic Sciences School
www.scuolapsb.unina.it

Department of Chemical Sciences
http://www.scienzechimiche.unina.it/

PhD in Chemical Sciences
http://www.scienzechimiche.unina.it/ dottorato

For contact and infos
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Prof. Angelina Lombardi
(PhD coordinator 36-37° cycles)
alombard@unina.it

Prof. Alessandra Napolitano
(PhD coordinator 38° cycle)
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neapōlis

LOCATION

Department of Chemical Sciences (DSC)
Complesso Universitario Monte S. Angelo
Via Cintia, 21
80126 Naples (Italy)

neapōlis

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II
SCUOLA POLITECNICA E DELLE SCIENZE DI BASE

Polytechnic and Basic Sciences School

PhD Program in Chemical Sciences

UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II - DIPARTIMENTO DI
SCIENZE CHIMICHE

AIMS

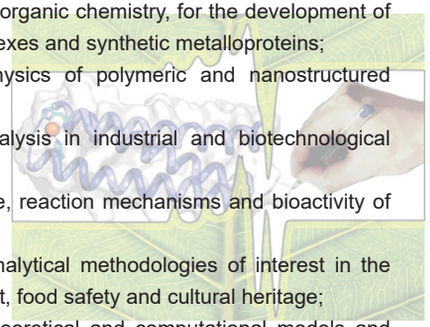
The PhD course in Chemical Sciences is aimed at providing advanced and rigorous training to the next generation of scientists, featuring innovative and independent skills in the organization and management of research and development activities, in Academia and Industry, in several chemical sectors.

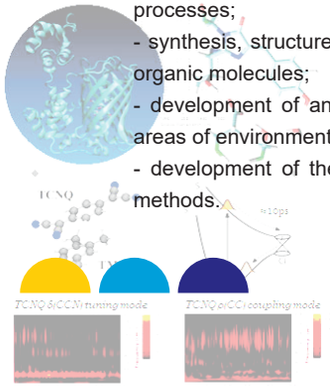
Great attention is devoted to **multidisciplinary aspects of research and its integration with related disciplines** (such as Physics, Biology, Engineering), in order to broaden the knowledge horizon and, therefore, future job opportunities.

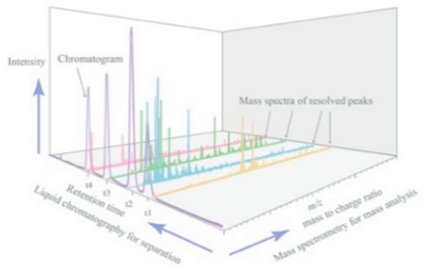
The training includes different orientations that, while sharing the scientific and methodological approach, are aimed at understanding structure/function/properties relationships in compounds and materials of different nature and simultaneously at identifying possible applications in cutting-edge sectors, ranging from catalysis, sensors, micro- and opto-electronics, biomedicine, biology and diagnostics.

The teaching and research activity is mainly focused on the following topics:

- chemistry and biochemistry of peptides, proteins and nucleic acids;
- inorganic and bioinorganic chemistry, for the development of metallorganic complexes and synthetic metalloproteins;
- chemistry and physics of polymeric and nanostructured materials;
- reactivity and catalysis in industrial and biotechnological processes;
- synthesis, structure, reaction mechanisms and bioactivity of organic molecules;
- development of analytical methodologies of interest in the areas of environment, food safety and cultural heritage;
- development of theoretical and computational models and methods.







PhD PROGRAM

The three-year PhD course is generally structured as follows:

- At the beginning of the training/research course, each PhD student should present to the Academic Board a detailed report of the project that is intended to develop along with an oral presentation. The Board assigns the thesis tutor and supervisor to the project.
- I Year: study of the literature related to the project, acquisition, and theoretical-practical improvement on the techniques useful for carrying out the research and beginning of the research activity.
- II Year and III Year: research activity, also including a period abroad.

The PhD course has a strong international imprinting, with numerous collaborative relationships established with prestigious foreign institutions.

PhD students are requested to spend a period (up to 6 months) at another university or research center, preferably abroad.

In the last five years PhD students in Chemical Sciences have developed part of their research activities at laboratories in Europe (France, Spain, Belgium, Germany, UK, Sweden, Finland, etc) as well as in USA, Canada and Japan.

Several PhD students have been selected within the Marie Skłodowska-Curie Innovative Training Networks 2020.

PARTNERSHIP WITH COMPANIES AND INSTITUTIONS

The collaborative links of the PhD in Chemical Sciences with companies in the Campania area and Italy are very tight.
Each year several PhD positions are funded or co-funded by companies.
PhD projects aimed at developing close interactions with companies are underway, supported by national programs, like PON or PNNR.

Companies/istitutions involved in the last five years:
Avanteck Group, srl – Angri (SA)
BioSearch, srl - Pozzuoli (NA)
Bracco, SpA - Milan
CMD Costruzioni Motori Diesel, SpA - S. Nicola la strada (CE)
Dompè Farmaceutici SpA - Milano
Giotto Biotech, srl – Sesto Fiorentino (FI)
GSK Vaccines, srl - Siena
Hortus Novus, srl – Canistro (AQ)
IBSA Farmaceutici ,srl - Lodi
Italian Printing inks, srl – Naples
Itelyum Regeneration, SpA - Pieve Fissiraga (LO)
Lamberti, SpA Albizzate (VA)
Merck Serono, SpA - Rome
Novamont, SpA – Novara and Piana di Monte Verne (CE);
Silvateam, SpA – S. Michele Mondovì (CN)
SOLTAR Chimica, srl - Scafati (SA)
Synlab Italia srl - Monza (MB)
Termoplast srl - Gambassi Terme (FI)

CNR, National Research Center, Italy
ENEA, Italian National Agency for New Technologies, Energy and Sustainable Economic Development.

PhD projects developed with companies in the form of **"Advanced Apprenticeship Contract"** in which the PhD student develops the project in the company while carrying out her/his training at university are also underway.

Joint doctoral supervision and training
Joint PhD projects between Naples University Federico II and other Universities and Academies in Europe have been established over the last years.
Examples include
ÅBO AKADEMI UNIVERSITY (ÅAU), FINLAND
UNIVERSITY of MENTOURI, CONSTANTINE, ALGERIA
UNIVERSITE GRENOBLE ALPES, FRANCE