CHEMISTRY

Section “Positions and scholarships” integrated on 29/04/2020
Section “Positions and scholarships” integrated on 19/05/2020
Section “Positions and scholarships” integrated on 17/06/2020
Section “Positions and scholarships” integrated on 22/06/2020
Section “Positions and scholarships” modified on 23/06/2020

Coordinator	Prof. Domenica Tonelli Department of Industrial Chemistry "Toso Montanari” Viale del Risorgimento 4 Bologna domenica.tonelli@unibo.it
Starting date of the PhD Programme	01/11/2020
Duration	3 calendar years
Language of the PhD Programme	English
Mandatory stay abroad	Yes (6 months)
Curricula	**Research topics**
1. Chemical Sciences	The research topics of the curriculum **Chemical Sciences** include all areas of chemistry, from computational chemistry (e.g., modelling of molecular materials, computational photochemistry and photophysics, spectroscopy), to physical chemistry (e.g., study of solid state and liquid crystals), electrochemistry (e.g., electrochemistry of molecular materials and for energy, electrochemical analysis techniques), photochemistry (e.g., systems for energy conversion, photoreactive materials, sensors and luminescent tracers), study of polymers (e.g., production of polymeric materials for biomedical applications), analytical sciences (e.g., analytical methods based on advanced separative techniques, bioanalytical, environmental and cultural heritage chemistry, biosensors), organic chemistry (e.g., chemistry of radicals and host-guest systems, organic synthesis, synthesis by enzymatic catalysis, development of materials and methods for "Green Chemistry"), structural and solid state chemistry (e.g., "Crystal Engineering", development of materials for biomedical applications, synthesis and characterization of nanostructured materials), and molecular spectroscopy (e.g., Raman, electron and rotational spectroscopy). For many topics, the research has important multidisciplinary implications, in particular as concerned nanotechnological and biomedical applications.
2. Industrial Chemistry	The research topics of the curriculum **Industrial Chemistry** relate to the areas of industrial chemistry, chemistry of materials (e.g., polymers and ceramics) and processes, analytical and environmental chemistry. The research activities include the development of new, more environment-friendly industrial processes (by operating on a laboratory scale or in pilot plants), the innovation or improvement of the industrial production of chemical substances by introducing "sustainable" processes ("Green Chemistry"), the study of methods for the reduction of pollutants and for the production of fuels, the synthesis of polymeric materials of industrial applications and for the conversion of energy, the development of new catalytic materials (e.g., organometallic compounds or metal complexes) and their evaluation in industrial applications in order to their determine characteristics, reactivity, and role, and the study of use of renewable sources (e.g., biomass) for the production of chemicals, fuels or energy, the application of advanced analytical techniques for the characterization of materials for energy storage and production and for the development of sensors, the electrochemical synthesis of catalysts of industrial interest.

PhD positions and scholarships

Position n.	Financial support	Description	Curriculum	Positions linked to research subjects
1	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
2	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
3	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
4	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
5	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
6	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	

7	PhD Scholarship	Totally funded by the University of Bologna general budget	Chemical Sciences	
8	PhD Scholarship	Totally funded by the University of Bologna general budget	Industrial Chemistry	
9	PhD Scholarship	Totally funded by the University of Bologna general budget	Industrial Chemistry	
10	PhD Scholarship	Totally funded by the University of Bologna general budget	Industrial Chemistry	
11	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Chemistry "G. Ciamician"	Chemical Sciences	
12	PhD Scholarship	Funded by the University of Bologna general budget and co-funded by the Department of Industrial Chemistry "Toso Montanari"	Industrial Chemistry	
13	PhD Scholarship	Funded by MIUR under the "Departments of Excellence" initiative	Chemical Sciences	
14	PhD Scholarship	Funded by MIUR under the "Departments of Excellence" initiative	Chemical Sciences	
15	PhD Scholarship	Funded by the "Ing. Luciano Toso Montanari" Foundation	Industrial Chemistry	Wearable Electrochemical sensors for sweat monitoring
16	PhD Scholarship	Funded by the "Ing. Luciano Toso Montanari" Foundation	Industrial Chemistry	Heterogeneous catalysts for biomass transformation
17	PhD Scholarship	Funded by CERIC	Industrial Chemistry	Recovery and characterization of layered oxides materials from spent batteries: a step forward towards sustainability
18	PhD Scholarship	Funded by SACMI Imola S. C.	Industrial Chemistry	Transformation technologies of new sustainable materials. Finding, execution, development and optimization of analytical techniques to characterize the materials and quantification of volatile substances deriving from processes
19	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari" with funds made available by Progetto Alte Competenze 2020 Regione Emilia Romagna - POR/FSE 2014/2020, DGR nr. 255 del 30/03/2020: Assegno di Ricerca Rif. PA 2019-13552/RER ID. nr. 11 – Cod. Org. 5827 (CUP J34I19004870002) - Dott.ssa Tiziana Benelli. The research grant will have a duration of 12 months, renewable up to 36 months, and a gross percipient amount of € 24.425,94.	Industrial Chemistry	Additive Manufacturing for the production of composite materials with recycled thermoplastic matrix and reinforced with recycled carbon fibers in the frame of Circular Economy
20	Research Grant	Provided by Centro Interdipartimentale "Alma Climate" with funds made available by Progetto Alte Competenze 2020 Regione Emilia Romagna - POR/FSE 2014/2020, DGR nr. 255 del 30/03/2020: Assegno di Ricerca Rif. PA 2019-13552/RER ID. nr. 20– Cod. Org. 5827 (CUP J34I19004870002) - Prof. Fabrizio Cavani. The research grant will have a duration of 12 months, renewable up to 36 months, and a gross percipient amount of € 24.425,99.	Industrial Chemistry	New sustainable pathways for the synthesis of intermediates for the fine chemicals and pharma industries, by means of CO2 and wastes as starting materials, in a Circular Economy framework
21	PhD Scholarship	Funded by the Department of Chemistry "G. Ciamician" partly with funds made available by Prin 2017 - 201732PY3X - "Photoresponsive host-guest functional systems in liposomes	Chemical Sciences	Design and characterization of new photoactive hostguest systems in solution and liposomes

		(PHOLIES)" (Ref. Prof. Serena Silvi)		
22	PhD Scholarship	~~Funded by the Department of Chemistry "G. Ciamician"~~ Funded by the Department of Chemistry "G. Ciamician" with funds made available by CNR and Finceramica	Chemical Sciences	Biomaterials and nanotechnologies for regenerative medicine
23	Research Grant	Provided by the Department of Industrial Chemistry "Toso Montanari". The research grant will have a duration of 12 months, renewable up to 36 months, and a gross percipient amount of € 19.367.	Industrial Chemistry	Hydrogen production and separation systems

Positions linked to specific research subjects: during the oral test, applicants may express their interest in one or more positions linked to specific research subjects. Considering the expressions of interest above, the Admission Board shall express its view on the suitability of the interested applicants, taking into account their specific skills, experience and aptitude.

Admission requirements

Please, see art. 2 of the Call for applications

Mandatory documents to be attached to the application

Please, see art. 3 of the Call for applications.
The Curriculum Vitae must briefly describe the subjects dealt with by the Master's degree thesis.
The Curriculum Vitae must be drafted in the European "Europass" format.

Further qualifications that may be attached to the application, if in possession of the applicant (only qualifications attested by documents drawn up in Italian, English, French, German and Spanish shall be considered as valid and assessed by the Admission Board)

- Motivation letter. This must include the reasons prompting the applicant to attend the PhD Programme and those relevant experiences and research interests, that make the applicant suitable for the specific PhD Programme (3000 characters maximum, including spaces).
- List of the publications (monographs, articles published on scientific journals, book's chapters).
- List of the minor publications (conference papers, etc.).
- List of the abstracts and posters presented during national and international conferences, etc.
- Professional Master courses completed in Italy (1st or 2nd level) relevant to the PhD Programme.
- Postgraduate vocational training programmes/specialisation programmes relevant to the PhD Programme.
- Summary of the thesis defended within the framework of Specialization Schools. The summary cannot exceed 3000 characters.
- Teaching activity carried out at university level.
- Research activity of any kind - whether basic, applied, translational, etc. - carried out in any capacity, including when covered by research grants, and as a staff member of research projects.
- Work activity.
- Vocational internships.
- Curricular and non-curricular training and guidance internships.
- Periods spent abroad for study purposes (Erasmus or similar).
- Other qualifications attesting the suitability of the applicants (scholarships, prizes, etc).

Prove di ammissione (art. 4 del bando)

Examination type	**Schedule** (please, note that applicants shall not receive any communication concerning the exams schedule)	**Examination results publication** (please, note that applicants shall not receive any communication concerning the publication of results)	
Evaluation of qualifications	Non-presential.	The results of the evaluation of qualifications shall be available online starting from the **16/06/2020** at the page http://studenti.unibo.it (please, select: "summary of the requests in progress" - "see detail" and open the pdf file "risultati valutazione titoli").	
Oral examination	**Date**	**24/06/2020** In case that the oral examination cannot be completed in one day due to the large number of applicants, the oral exam schedule shall be made available at the webpage http://studenti.unibo.it together with the results of the evaluation of qualifications	The results of the oral examination shall be available on the webpage http://studenti.unibo.it starting from **01/07/2020** (please, select "summary of the requests in progress" - "see detail" and open the pdf file "risultati prova orale").
	Time	09:30 a.m. (local time)	

	Applicants shall take the exam remotely. For further details please refer to the relevant provision laid down in art. 4 of the Call for applications.

Evaluation criteria

Points will be allocated to applications out of a total of 100 on the basis of the following weighting:

1. **Qualifications**
   - Minimum for admission to the oral exam: 30 points
   - Maximum: 50 points

   Only qualifications relating to the last 5 calendar years prior to the calendar year of publication of the Call for applications shall be taken into consideration, with the exception of the University Degree (Diploma di laurea). Please, note that qualifications must be consistent with the PhD Programme.
   Points relating to qualifications shall be allocated on the basis of the following criteria:
   - Graduation final mark. Undergraduates shall be evaluated on the basis of the Weighted Average Mark (WAM): max 20 points
   - Publications: max 5 points
   - Consistency of the thesis topics described in the CV with the topics of the PhD course: max 15 points
   - Motivational letter: max 5 points
   - Other qualifications: max 5 points
2. **Oral examination**
   - Minimum for inclusion in the final ranking list: 30 points
   - Maximum: 50 points

   Oral examination is intended to assess the suitability of the applicant to pursue scientific research as well as the general knowledge of issues connected to the Curricula of the PhD Programme. During the oral examination, knowledge of English language shall be assessed.
   The oral examination is carried out in Italian or in English.
   Points relating to the oral examination shall be allocated on the basis of the following criteria:
   - Knowledge of the English language: max 5 points
   - General knowledge of issues connected to the PhD Programme: max 45 points.

Possible evaluation sub-criteria will be available on the Unibo website, selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".

Final ranking list and enrolment (arts.6 and 7 of the Call for applications)

After the publication of the results of the oral exam, the final ranking list will be available on the Unibo website, selecting the relevant PhD Programme → "PhD programme information" at the bottom of the page in the section "Notices".
Following the publication of the final ranking list, successful applicants must enroll on http://studenti.unibo.it by the deadline indicated on the Unibo website, selecting the relevant PhD Programme → "PhD programme information".