UNIVERSITÀ DI PARMA

CHEMICAL SCIENCES	
CYCLE	**XXXVII**
COORDINATOR	Prof.ssa Alessia BACCHI email: alessia.bacchi@unipr.it Department of Chemistry, Life Sciences and Environmental Sustainability
DURATION	3 anni
STARTING DATE OF THE PHD PROGRAM	01/11/2021

RESEARCH TOPICS (The candidate **MUST mandatorily** indicate one research topic in the ANNEX A)

- **A)** Macrocyclic and metallamacrocyclic complexes of lanthanides for applications in nano- and biotechnology
- **B)** Spectroscopy and modeling of fluorescent systems for microscopy and advanced applications
- **C)** Design and characterization of polydentate ligand for the complexation and extraction of critical metals
- **D)** Heterogeneous catalysts for eco-compatible syntheses
- **E)** Fabrication of functional materials by molecular inclusion in porous MOFs
- **F)** Synthesis of multivalent calixarene-based ligands for transition metal catalysis
- **G)** An original access to molecular complexity through the activation of conjugated allenes promoted by visible light
- **H)** Development of catalytic methodologies for the synthesis of industrially/pharmaceutically relevant compounds (grant PoC del MISE - CUP: C96I20000110006)
- **I)** Synthesis and evaluation of new additives for lubricants
- **L)** Synthesis and study of multichromophoric ligands for applications of biomedical interest (grant PRIN 2017, 2017E44A9P: BacHounds: Supramolecular nanostructures for bacteria detection – CUP D54I17000140001)

TRAINING OBJECTIVES

The training program aims to provide the PhD in Chemical Sciences the necessary skills to propose and manage research projects in the advanced fields of Analytical Chemistry, General and Inorganic Chemistry, Physical Chemistry, Industrial Chemistry, and Organic Chemistry . The PhD course in Chemical Sciences requires each student to work within one of the research groups active at the Chemistry Unit of the Department of Chemistry, Life Sciences and Environmental Sustainability (SCVSA), and to follow a specific training pathway in the chosen sector; this is achieved also through: participation in research activities at qualified centers both in Italy and abroad, participation to national and international schools and conferences, and through the publication of scientific results in inernational journals. Interdisciplinary training activities, aimed at developing PhD students the ability to exhibit, discuss and disseminate the subjects of their work both in the academic and industrial context and even more generally in society, are also part of the program.

ADMISSION REQUIREMENTS	Regardless of age and citizenship, applicants holding at least one of the following academic qualifications can apply for admission: – Laurea specialistica or Laurea magistrale (second cycle master's degree) – Laurea Vecchio Ordinamento (degree obtained under the previous Italian regulations); – Second cycle Master's degree obtained abroad, equivalent to the above mentioned Italian degrees and recognized as suitable for the admission to doctoral program Undergraduate applicants may also submit applications with the obligation of getting their degree by **October 31st 2021.**

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POSITION PUT OUT TO COMPETITION	10	With Scholarship	10

Position with Scholarship

N°	*Funding entity*	*Research Topic*
3	Scholarship funded by University of Parma (Ministerial funds)	Research Topic: **A-B-C-D-E-F**
1	Scholarship funded by University of Parma (University funds)	Research Topic: **A-B-C-D-E-F**
1	Scholarship co-funded by Fondazione Cariparma	Research Topic: **A-B-C-D-E-F**
1	Scholarship funded by the Department of Chemistry, Life Sciences and Environmental Sustainability (funds of "*Departments of Excellence*" program)	Research Topic: **A-B-C-D-E-F**
1	Scholarship funded by the Department of Chemistry, Life Sciences and Environmental Sustainability	Research Topic **G)**: An original access to molecular complexity through the activation of conjugated allenes promoted by visible light
1	Scholarship partly financed with University funds and co-financed by the Department of Chemistry, Life Sciences and Environmental Sustainability (co-financed by project PRIN 2017, 2017E44A9P: BacHounds: Supramolecular nanostructures for bacteria detection - CUP D54I17000140001)	Research Topic **L)**: Synthesis and study of multichromophoric ligands for applications of biomedical interest
1	Scholarship partly financed with University funds and co-financed by the Department of Chemistry, Life Sciences and Environmental Sustainability (co-financed by project PoC MISE – CUP: C96I20000110006)	Research Topic **H)**: Development of catalytic methodologies for the synthesis of industrially/pharmaceutically relevant compounds
1	Scholarship funded by Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali (INSTM)	Research Topic **I)**: Synthesis and evaluation of new additives for lubricants

ADMISSION PROCEDURES	**Assessment of QUALIFICATIONS:** up to 40 points (a minimum score of 20 points shall be required to be admitted to the Oral Exam) **ORAL EXAM:** up to 80 points **Minimum score for ELIGIBILITY**: 70/120
Foreign Language	Language the fluency of which shall be assessed during the Oral Exam: **ENGLISH**. The evaluation of the knowledge of this language will be oral and will consist in the discussion of part of the research topics in English.

CANDIDATES ADMITTED TO THE ORAL TEST CAN TAKE THE EXAM IN PRESENCE OR REMOTELY IN AUDIO AND VIDEO TELECONFERENCE

(Candidates who intend to take the Oral Exam remotely must submit request, to this purpose, as per the model attached to the competition notice)

THE INTERVIEW MAY BE HELD ALSO IN ENGLISH

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LIST OF QUALIFICATIONS TO BE SUBMITTED AND THEIR ASSESSMENT	
MANDATORY DOCUMENTS TO BE ATTACHED TO THE ON-LINE APPLICATION	
ANNEX A	(art. 5 of the Competition notice)
Identification Document	Scanned Copy of a valid identity document with photo (i.e. identity card, passport)
Curriculum Vitae et studiorum	No specific CV format is required (see art. 4 of the Competition notice)
Abstract of degree thesis	Abstract of the second cycle master's degree thesis. Undergraduate applicants must submit the draft of the thesis approved by their supervisor (abstract/draft of the thesis: 10.000 characters including spaces)
Qualifications	**Certificates and academic transcript of records for both Bachelor and Master degrees** containing the following details for each degree held: (art. 4 of the Competition notice): University that granted the degree - Type of degree (first cycle/second cycle/single cycle) Name of the degree program - Date of graduation - Final mark - List of exams and corresponding scores (academic transcript of records) - Translation into Italian or English (only for degrees issued in languages other than Italian or English).
FURTHER QUALIFICATIONS THAT MAY BE ATTACHED TO THE APPLICATION, IF IN POSSESSION OF THE APPLICANT (only qualifications attested by a document drawn up in Italian or in English will be considered)	
Statement of Research interest	Short text – maximum 1 page – in Italian or in English, aimed at: 1) explaining the candidate's reasons to attend the PhD programme; 2) research interests, with particular reference to topics of interest in the specific topics proposed; 3) skills that can contribute to a research project in the field of Chemical Sciences.
Scientific Publications	Articles on scientific journals with referees, communications presented at conferences or symposia, book chapters, other publications related to Chemical Sciences.
Other experiences	– **Participation in Schools or training courses** related to Chemical Sciences – **Any awards** received related to Chemical

EVALUATION CRITERIA		
QUALIFICATION	**EVALUTATION CRITERIA**	**POINTS**
Curriculum Vitae et studiorum	Relevance of the academic career as well as postgraduate experiences and other research activities related to Chemical Sciences	**Up to 17 points**
Graduation mark or Average of the exam marks (if the candidate will attain the degree no later than 31 October 2021)	Assignment of a score related to the final mark or, for candidates who will attain the degree by 31 October 2021, a score related to the average of the exam marks	**Up to 5 points**
Graduation thesis	Consistency of the Master's Degree thesis with the doctoral programme research topics	**Up to 10 points**
Statement of Research Interest	Motivation and competence proved in the text presented	**Up to 3 points**
Scientific publications	Impact and relevance of the qualifications presented related to Chemical Sciences	**Up to 5 points**
ORAL EXAM	**EVALUATION CRITERIA**	**POINTS**
The ORAL EXAM takes place in Italian or in English for foreign candidates. It includes a discussion of the qualifications presented by the candidate and an assessment of their scientific profile and design skills.	○ knowledge of the subject and skills of the candidate for the proposed research activities are assessed by a discussion on the qualifications submitted for evaluation ○ knowledge of English is assessed by discussion of topics of research and by understanding of scientific texts.	**Up to 80 points**

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SCHEDULE OF THE ADMISSION EXAMS		
ORAL EXAM	**DATE**	15 September 2021 (with possible extension in the following days
	TIME	09:30 am (Italian time)
	PLACE	Departiment of Chemistry, Life Sciences and Environmental Sustainability CHEMISTRY BUILDING Parco Area delle Scienze, 17/A – Campus 43124 PARMA - ITALY
OTHER INFORMATION		For foreign candidates, the admission examinations may be held in English at the candidate's choice. **The choice of the Research Topic to be expressed in Annex A is not binding on the assignment of the research project, and it is intended to assess candidates skills during the admission exam.**