







MATERIALS SCIENCE AND TECHNOLOGY	
CYCLE	XXXIX
COORDINATOR	Prof. Enrico DALCANALE email: enrico.dalcanale@unipr.it Department of Chemistry, Life Sciences and Environmental Sustainability
DURATION	3 years
STARTING DATE OF THE PHD PROGRAM	01/11/2023
PARTNER INSTITUTION	<ul style="list-style-type: none">The Italian National Research Council (C.N.R.)
TRAINING OBJECTIVES	
The PhD program in Materials Science aims at the preparation of PhDs equipped with strong scientific background and wide research experience in materials science. Enrollment is open to MS laureates in Materials Science, Chemistry, Physics, Industrial Chemistry, Engineering and Biological Sciences. The Board provides a wide range of courses and seminars in different scientific areas, with particular focus on all aspects of materials science (synthesis, characterization, functions and devices). It also offers soft skills courses. The PhD program offers an interdisciplinary preparation through research activity, also in collaboration with foreign Institutions.	
RESEARCH AREAS	
<ul style="list-style-type: none">Photovoltaic devicesFunctional materialsNanodiagnosticsNanostructured materialsSupramolecular sensors and devicesSemiconductive massive crystalsLow dimensionality semiconductive structuresSelf-healing and self-diagnostic polymersCeramic and composite materialsMagnetic materials and magneto-refrigerationVitrimers	
ADMISSION REQUIREMENTS	Regardless of age and citizenship, applicants holding at least one of the following academic qualifications can apply for admission: <ul style="list-style-type: none">– 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 Undergraduates can also apply for admission to the selection, with the obligation to obtain the degree by 31.10.2023

POSITIONS PUT OUT TO COMPETITION*		17
(Modified by Rector Decree n. 1320 of 19.07.2023)		
With Scholarship		17
Position with Scholarship		
N°	Funding entity	Research Topic, if any
2	Scholarship funded by University of Parma	---



	(Ministerial funds)	
1	Scholarship funded by The Italian National Research Council C.N.R. - IMEM	Study of the interaction of X-ray radiation on nanosystems for biomedical applications
1	Scholarship funded by The Italian National Research Council C.N.R. - ISSMC	Eco-design of hybrid ceramic materials for water treatment from vegetable matrices and waste biomass
Position with Scholarship LINKED TO SPECIFIC TOPICS (art. 11 of the Competition notice) (Modified by Rector Decree n. 1320 of 19.07.2023)		
N°	Funding entity	BOUND RESEARCH TOPIC
1	Scholarship funded by University of Parma (Ministerial funds) and co-financed by the Department of Chemistry, Life Sciences and Environmental Sustainability (funds PRIN2022 COntrolled Shuttling inside artificial MOlecular tubes COSMO)	Controlling molecular and ionic transport across biomimetic membranes through artificial molecular tubes
1	Scholarship funded by University of Parma (Ministerial funds) and co-financed by The Italian National Research Council C.N.R. - IMEM	Drug delivery systems based on unconventional materials and releases mechanisms
1	Scholarship partly financed with UNIVERSITY funds and co-financed by The Italian National Research Council C.N.R. - ISSMC	Synthesis, characterization and modeling of thin multifunctional ceramic coatings for industrial applications
1	Scholarship funded by EMILIA ROMAGNA REGION  The assignment of this scholarship is subject to the declaration of residence or domicile of the beneficiary in Emilia-Romagna	Nanostructured Hybrid Systems for the Encapsulation and Use of Microbiomes
1	Scholarship financed with funds under the PNRR–Mission 4 component 1 (Ministerial Decree 118/2023 art. 8 “PNRR Research”) CUP D92J23000200006 	Preparation of hierarchically porous polymers with adsorption and separation properties towards industrially relevant gases through the introduction of macrocycles with preorganized cavities.
1	Scholarship financed with funds under the PNRR–Mission 4 component 1 (Ministerial Decree 118/2023 art. 8 “PNRR Research”) CUP D92J23000200006 	Fiber-reinforced ceramic composites for aerospace applications
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa MEMC Electronic Materials S.p.A. CUP D92J23000340004 	Energy and environmental valorization of sludge from the purification of industrial wastewater from the processing of silicon wafers



1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa Industrie Bitossi S.p.A. CUP D92J23000340004	High-efficiency sintering of B4C-based non-oxide ceramics for applications in severe environments
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa NanoPhoria S.r.l. CUP D92J23000340004	Calcium phosphate nanoparticles for the development of formulations capable of selectively releasing cardio-specific biomolecules.
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa POLYGLASS S.p.A. CUP D92J23000340004	Self-healing elastomeric polyolefins
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa ULISSE Biomed S.p.A. CUP D92J23000340004	Molecular sensors based on programmable DNA nanotechnology for the detection of proteins of clinical interest
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa SABIC Global Technology B.V. CUP D92J23000340004	Innovative flame retardants for polyolefins
1	Cofinanziata con fondi a valere sul PNRR – Missione 4 componente 2 (D.M. 117/2023) e cofinanziata dall'Impresa Bormioli Pharma S.p.A. CUP D92J23000340004	Development and characterization of strengthening technologies of pharma glass

ADMISSION PROCEDURES

Assessment of QUALIFICATIONS: up to 60 points
(a minimum score of 30 points shall be required to be admitted to the Oral Exam)
ORAL EXAM: up to 60 points
Minimum score for ELIGIBILITY: 70/120

Foreign Language	Language the fluency of which shall be assessed during the Oral Exam The evaluation of the knowledge of this language will be oral and will consist in translating of a scientific text.	ENGLISH
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ORAL EXAMINATION INDICATION



THE ORAL EXAM TAKES IN THE PRESENCE and with the possibility of carrying out the interview **REMOTELY** for candidates residing abroad or temporarily abroad for study / work reasons or in isolation / quarantine for COVID-19 virus infection. To this end, candidates must submit a **motivated REQUEST** as per the model attached to the competition announcement)

THE INTERVIEW MAY BE HELD ALSO IN ENGLISH

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)
Academic 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).

LIST OF EVALUABLE QUALIFICATIONS

(only qualifications attested by a document drawn up in Italian or in English)

Curriculum Vitae et studiorum	Including academic career and postgraduate experience, accompanied by a statutory declaration in lieu of the certification of the exams passed with the relevant marks, as well as the final graduation mark.	Up to 20 points
Graduation mark	Score related to the final mark: - 110 with honors (magna cum laude): 20 points - 110: 16 points - From 105 to 109: 12 points - From 100 to 104: 8 points - From 95 to 99: 4 points - Under 95: 0 points	Up to 20 points
Average of the exam marks (if the candidate will attain the degree no later than 31 October 2023)	Score related to the average of the exam marks: - 30/30: 20 points - From 28/30 to 29/30: 16 points - From 26/30 to 27/30: 12 points - 25/30: 8 points - 24/30: 4 points - Under 24/30: 0 points	Up to 20 points
Graduation thesis	Consistency of the Master's Degree thesis with the doctoral program research topics (briefly describe the topics in the curriculum vitae)	Up to 10 points
Statement of Research Interest	Short text – maximum 2 pages – in Italian or in English, aimed at explaining the candidate's reasons to attend the PhD program and at describing her/his specific research interests	Up to 5 points



Scientific Publications	Articles and/or reviews in scientific journals with peer reviewing, abstracts of papers or posters presented at conventions or meetings	Up to 5 points
ORAL EXAM		
Interview Program	Evaluation CRITERIA	POINTS
The ORAL EXAM will focus on the candidate's motivation to attend the PhD, on the description of his specific research interests and on a discussion of the qualifications presented by the candidate.	<ul style="list-style-type: none">○ knowledge of foreign languages: 10 points○ general knowledge of issue connected to the Master's thesis: 25 points○ general knowledge of issues connected to the PhD course: 25 points	Up to 60 points

SCHEDULE OF THE ADMISSION EXAMS

It is the candidate's responsibility to verify the outcome of the evaluation of qualifications, which can be consulted in their reserved area by connecting to the page <http://unipr.esse3.cineca.it/Home.do> in the days preceding the date of the Oral Exam.

ORAL EXAM	DATE	15 September 2023 (with possible extension in the following days)
	TIME	09:00 AM (Italian Time)
	PLACE	Department of Chemistry, Life Sciences and Environmental Sustainability CHEMISTRY BUILDING Parco Area delle Scienze, 17/A – Campus 43124 PARMA - ITALY
ALTRE INDICAZIONI	<p>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. The PhD research topic will be assigned by the Academic Board.</p> <p>For foreign candidates, the admission examinations may be held in English at the candidate's choice.</p>	