



MATERIALS SCIENCE AND TECHNOLOGY	
Cycle	XXXVI
Coordinator	Prof. Enrico DALCANALE Department of Chemistry, Life Sciences and Environmental Sustainability email: enrico.dalcanale@unipr.it
Duration	3 years
Starting date of the PhD program	01/11/2020
Partner Institution	<ul style="list-style-type: none">The Italian National Research Council (C.N.R.)
Partner Institution for University Cooperation Agreements	<ul style="list-style-type: none">Kazan University (Russia)
Research Topics	
<ul style="list-style-type: none">Photovoltaic devicesFunctional materialsStrongly correlated systemsNanodiagnosicsNanostructured materialsSupramolecular sensors and devicesSemiconductive massive crystalsLow dimensionality semiconductive structuresSelf-healing and self-diagnostic polymersSurface supported molecular materialsMagnetic materials and magneto-refrigerationCeramic and composite materialsMaterials and devices for memristic devices and for bioelectronics	
Training Objectives	
<p>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.</p>	
Admission requirements	
<p>Regardless of age and citizenship, applicants holding at least one of the following academic qualifications can apply for admission:</p> <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 <p>Undergraduate applicants may also submit applications with the obligation of getting their degree by October 31st 2020.</p>	



POSITIONS PUT OUT TO COMPETITION		
With Scholarship		9
Reserved to holders of Research Grant		5
TOTAL		14
Positions with University Scholarship		
N°	<i>Funding entity</i>	<i>Research Topic</i>
3	Scholarship Ministerial funds	<ul style="list-style-type: none"> • Fluorescent materials for bioimaging • Development and study of functional nanostructured materials by advanced analytical microscopy • Synthesis and structural characterization of new multiferroic materials
1	Scholarship University funds	<ul style="list-style-type: none"> • Advanced Material Modeling of functional molecular materials
1	Scholarship funded by The Italian National Research Council (C.N.R.)	<ul style="list-style-type: none"> • Innovative biosensing materials
Position with Scholarship LINKED TO SPECIFIC TOPICS (art. 11 of the Call for applications)		
<p>During the Oral Exam, applicants may express their interest in being assigned a scholarship dedicated to a specific research topic to the Examination Board. The Board will express its judgement on eligibility to be assigned the scholarship in consideration of the specific competences, experience and specific aptitudes of the applicants.</p>		
N°	<i>Funding entity</i>	<i>BOUND RESEARCH TOPIC</i>
2	Funded by the Department of Chemistry, Life Sciences and Environmental Sustainability	<ul style="list-style-type: none"> • Experimental and computational study of crystallization kinetics in colloidal nanocrystals for application in functional materials for mechanics and catalysis • Covalent adaptable polymer networks with damage reporting properties
1	Funded by IIT – Italian Institute of Technology	<ul style="list-style-type: none"> • Electron nano-crystallography of materials
1	Cofounded by Industrie Bitossi S.p.A. and by The Italian National Research Council (C.N.R.)	<ul style="list-style-type: none"> • High efficiency sintering of ceramic materials with extreme hardness and mechanical strength for applications in harsh environments
Position reserved to holders of Research Grant		
N°	<i>Subject area of the research</i>	
5	ISTEK – Institute of Science and Technology for Ceramics <ol style="list-style-type: none"> 1. Hybrid biomaterials for medical applications 2. Bioactive ceramics and nanotechnologies for medicine 3. Nanomaterials for human and environment protection 4. Nanomaterials for human and environment protection 5. Nanostructured functional coatings 	



ADMISSION PROCEDURES

Assessment of QUALIFICATIONS: up to 60 points
(a minimum score of 10 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: **ENGLISH**.
The evaluation of the knowledge of this language will be oral and will consist in translating of a scientific text.

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

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 Call for Applications)
- Scanned Copy of a **valid identification document** with photo
- **Curriculum Vitae et studiorum** (art. 4 of the Call for Applications)
- **Abstract of the second cycle master's degree thesis.** Undergraduate applicants may submit the draft of the thesis approved by their supervisor (abstract/draft of the thesis: 10.000 characters including spaces)
- **Certificates and academic transcript of records for both Bachelor' and Master' degrees** containing the following details for each degree held: (art. 4 of the Call for Applications):
 - 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)

- **Final mark of graduation**
- **List of exams and corresponding scores** (academic transcript of records)
- **Statement of Research interest:** Short text – maximum 2 pages – in Italian or in English, aimed at explaining the candidate's willingness to attend the PhD and at describing the specific research interests
- **Scientific Publications:** Articles and/or reviews in scientific journals with peer reviewing, abstracts of papers or posters presented at conventions or meetings.



EVALUATION CRITERIA		
QUALIFICATION	EVALUTATION CRITERIA	POINTS
Curriculum Vitae et studiorum	Including academic career and postgraduate experience, accompanied with 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 2020)	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 and at describing the 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 EXAMINATION	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 thesis: 25 points ○ general knowledge of issues connected to the PhD course: 25 points 	Up to 60 points
SCHEDULE OF THE ADMISSION EXAMS		
ORAL EXAM	DATE	17 September 2020 (with possible extension to 18 September 2020)
	TIME	09:00 am (Italian time)
	PLACE	Department of Chemistry, Life Sciences and Environmental Sustainability Chemical Building Parco Area delle Scienze, 27/A – 43124 PARMA - ITALY
OTHER INFORMATION	For foreign candidates, the admission examinations may be held in English at the candidate's choice.	



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