UNIVERSITÀ DEGLI STUDI DI TORINO

"Annex 4" updated on 21st March 2019
(The updates are highlighted in red colour)

ANNEX 4

CALL FOR PHD POSITIONS – 35 cycle

PHD PROGRAMME IN CHEMICAL AND MATERIAL SCIENCES

PhD Programme Coordinator	Prof. Mario Chiesa
Department	Chemistry
PhD Programme Length	3 years
PhD web site	**http://dott-scm.campusnet.unito.it**
Course start date	1st November 2019
Departments involved in PhD programme	Department of Chemistry, Department of Molecular Biotecnology and Health Science, Department of Physics

Positions offered by the PhD Programme[1]	
n. 7 positions with scholarship, of which n. 2 reserved to candidates with international qualifications	of which: - 7 scholarships funded by the University
1 position reserved to students selected within specific international mobility programmes or within specific agreements in which the University of Torino is involved: H2020-MSCA-ITN- 811312-ACO	
n. 1 apprenticeship contract funded by Exenia Group S.r.l. *(This scholarship is linked to a specific project.)*	

Titles of Research Projects / Research Fields

The list of research projects is available at the end of this sheet. This list may be updated until Call's deadline.

Calendar of entrance examinations

[1] All additional scholarships and apprenticeship contracts (Legislative Decree no. 81/2015 art.45), which may become available after the publication of this Call, will be announced on the University websites http://www.unito.it/ricerca/fare-ricerca-unito/dottorati-di-ricerca and http://en.unito.it/research/phd/phd-programmes until Call's deadline.

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The calendar with information on dates and venues of entrance examinations shall be published on the websites: http://www.unito.it/ricerca/fare-ricerca-unito/dottorati-di-ricerca and http://en.unito.it/research/phd/phd-programmes starting from **9th April 2019.**

Useful information for applicants

Application fee: €50.00 for each application submitted. Candidates with international qualifications are exempted from paying the application fee.

Application fee deadline: 16th April 2019 (mandatory deadline) Candidates who do not pay the application fee within the deadline will be excluded from the competition.

<table>
<tr><td colspan="2">CALL FOR ALL POSITIONS</td></tr>
<tr><td colspan="2">Admission procedure</td></tr>
<tr><td colspan="2">Assessment of qualifications, research project and interview</td></tr>
<tr><td colspan="2">Documents to be uploaded in the on-line application</td></tr>
<tr><td colspan="2">• Application form (duly signed and including identification document/passport)
• For applicants with international qualifications: submit on-line documentation as specified in Art. 4 of this Call;
• For applicants under condition: provision of Bachelor's degree grade, certificate or self-certification with a complete list of academic transcripts concerning the 1st cycle degree (Laurea Triennale) and 2nd cycle degree (Laurea Magistrale) with marks, weighted average and credits. For applicants applying under condition, please also check Art. 5 of the Call.
• Research project (max 2 pages - spaces and bibliography included) written in English by the candidate choosing a title within those offered by the PhD Programme
• Publications (max 4)</td></tr>
<tr><td>Assessment criteria for all positions</td><td>maximum score 100 points</td></tr>
<tr><td>Assessment of qualifications:</td><td>maximum score 15 points</td></tr>
<tr><td>Final grade of Laurea (Laurea Ciclo Unico) or Degree of Laurea Magistrale (60%) and Degree of Laurea Triennale (40%)

• 110 L 6_____ points
• 106-110 5_____ points
• 100-105 4_____ points
• ≤99 1_____ point

For candidates applying under condition: Weighted average of list of examinations taken during the Laurea Magistrale (60%) and Laurea Triennale (40%) weighted by the following</td><td>maximum score 6 points</td></tr>
</table>

coefficients: w = 1 if $CFU_{aquired}/120 \geq 0.6$; w = 0.5 if $0.4 \leq CFU_{aquired}/120 < 0.6$; w=0.1 if $CFU_{aquired}/120<0.4$ or weighted average of list of examination of Laurea a Ciclo unico with w= $(CFU_{aquired}-180)/120$: • 29/30:_____ w×6 points • between 27 and 29/30 _____ w×5 points • between 25 and 27/30 _____ w×4 points • □25/30 _____ w×1 point	
Publications 1 point per publication (Publications will be assessed only if relevant to the programme and if their scientific dimension is well recognised; yet-to-be-published papers, non-published thesis or any other kind of non-published work will not be evaluated. A maximum of 4 already published publications will be assessed.)	maximum score 4 points
Other qualifications Each relevant title with recognized scientific value will be awarded with 1 point max, up to 5 points total. Any strictly professional qualification or traineeship will not be evaluated.	Maximum score 5 points
Research Project	*Maximum score 15 points*
Minimum threshold for admission to the oral interview	***15 points***
Oral interview	**Maximum score: 70 points**
Minimum threshold for passing the interview	*50 points*

Further information on examinations:

The interview will cover the presentation and the defence of the research project, the discussion of the master thesis as well as general knowledge of chemistry and of material science. The Board

will focus on: level of knowledge of the subject and communicating skills related to it; level of knowledge of the subject of the research project; originality and interdisciplinarity of the research proposal.

The Research Project (max 2 pages - spaces and bibliography included – written in English) carried out by the candidate choosing the title among those offered by the PhD, focusing on the following points: a) state of the art of the chosen subject; b) targets of the project; c) research plan over 3 years.

Knowledge of scientific English language is compulsory and will be assessed during the interview which will be partly in English.

The interview, on request of the candidate and duly authorised by the Examining Board, may be taken via Skype (Art. 8 of the Call).

Research projects

PhD Programme in Chemical and Materials Sciences

1) Removal of contaminants of emerging concern by advanced oxidation processes and assessment of their transformation pathways
2) Molecularly imprinted nanopolymers by solid phase synthesis: preparation, characterization and application as synthetic receptors
3) X-ray and ion beam techniques for the characterization and functionalization of advanced materials.
4) Numerical modeling of the mechanical properties of structured materials
5) Rapid solidification of metallic materials
6) Funtionalized biopolymers for advanced applications
7) Synthetic processes in unconventional solvents: new green avenues for fine chemicals.
8) Synthesis of chromophores, fluorophores and their functional derivatives for the developement of innovative materials and bio-probes
9) Synthesis and characterisation of photactive MOFs: using light for catalytic and sensors applications in a confined enviroment.
10) CO_2 conversion to methanol or formic acid catalized by transition metal catalysts.
11) Development of Quantum-Mechanical Methods for the Study of Solids and their Implementation in the CRYSTAL Program
12) Nanostructured materials for functional applications.

13) Isolation of hight-added value products by extraxtion in supercritical CO_2 and relative characterization and microninization.