UNIVERSITÀ DEGLI STUDI DI TORINO

"Annex 1" updated on 25th June 2020

(The updates and the corrections are highlighted in red colour)

(Annex 1)

CALL FOR PHD POSITIONS – 36th CYCLE

PHD PROGRAMME IN CHEMICAL AND MATERIAL SCIENCES

PhD Programme Coordinator	Prof. Bartolomeo CIVALLERI
Department	Chemistry
PhD Programme Length	3 years
PhD website	http://dott-scm.campusnet.unito.it
Course start date	1st October, 2020
Departments involved in PhD programme	Department of Chemistry, Department of Physics, Department of Molecular Biotechnology and Health Sciences

Positions offered[1] by the PhD Programme	
n. 12 positions with scholarships, of which 2 reserved to candidates with international qualifications	of which: - 7 scholarships funded by the University of Torino - 2 scholarships funded by Department of Chemistry - 1 scholarship funded by INSTM (Consorzio Interuniversitario Nazionale per la Scienza e Tecnologia dei Materiali) - 1 scholarship funded by Department of Chemistry *(co-funded By CRF)* - 1 scholarship funded by CRF
n. 5 positions without financial support	
n. 1 position reserved to students selected within specific international mobility programmes in which the University of Torino is involved: H2020-MSCA-ITN-2019 - Bioremia project	

[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 Dottorati di Ricerca and PhD until Call's deadline.

n. 1 position reserved to students selected within specific international mobility programmes or within specific agreements in which the University of Torino is involved: InnovaXN MSCA COFUND programme
n. 1 position reserved to students who are recipients of scholarships granted by foreign institutions (Costa Rica)
n. 1 apprenticeship position for Higher Training and Research with TEA SISTEMI S.r.l. *(subject to approval by the Regione Piemonte (Piedmont Region). This position is linked to specific research topic)*
n. 1 apprenticeship position for Higher Training and Research with BIOSFERED S.r.l. *(subject to approval by the Regione Piemonte (Piedmont Region). This position is linked to specific research topic)*

CALL FOR POSITIONS	
Admission procedure	
Assessment of qualifications and interview	
Documents to be uploaded in the online application	
• 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)	
Assessment criteria	**Maximum score 100 points**
Assessment of qualifications	**Maximum score 15 points**
Final grade of Laurea/Degree (Laurea Ciclo Unico/Single Cycle Master's degree) or Degree of Laurea Magistrale/Master (60%) and Degree of Laurea Triennale/Bachelor (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/Master's Degree (60%) and Laurea Triennale/Bachelor Degree (40%) weighted by the following 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	maximum score 6 points

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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 Examining 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.

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

Titoli progetti di ricerca
Dottorato di Ricerca in Scienze Chimiche e dei Materiali

Titles of research project
PhD Programme in Chemical and Materials Sciences

1) Approccio integrato sostenibile per ottenere la rimozione da sistemi acquosi di contaminanti emergenti / Sustainable integrated approach to achieve the removal of contaminants of emerging concern from polluted waters

2) Nanomateriali ibridi fotoattivi per applicazioni in ambito ambientale ed energetico / Photoactive hybrid nanomaterials for environmental and energy applications

3) Sviluppo e applicazione di metodi quanto-meccanici per lo studio delle proprietà di solidi e superfici / Development and application of quantum-mechanical methods to study solids and surfaces

4) Materiali porosi drogati con metalli per catalisi / Metal-doped porous materials for catalysis

5) Metodologie sperimentali e computazionali per la determinazione di relazioni struttura-proprietà in sistemi cristallini / Experimental and computational methodologies for the determination of structure function relationships in crystalline systems

6) Sistemi inorganici innovativi per applicazioni avanzate / Innovative inorganic systems for advanced applications

7) Studio teorico e sperimentale di leghe Heusler per applicazioni termoelettriche / Computational and experimental study of Heusler alloys for thermoelectric applications.

8) Sistemi innovativi di rilascio controllato di farmaci a base polimerica per la cura di malattie neurodegenerative / Innovative polymeric drug delivery systems for treatment of neurodegenerative diseases

9) Disegno e Sviluppo di Nuovi Concetti Sintetici per la Preparazione di Composti di Potenziale Interesse Biologico / Design and Development of Novel Synthetic Concepts for the Preparation of Compounds of Potential Biological Interest

10) Progettazione, Sintesi, Caratterizzazione e Applicazioni Innovative di Molecole Fluorescenti / Design, Synthesis, Characterization and Novel Smart Applications of Fluorophores.

11) Funzionalizzazione e caratterizzazione di ossidi mediante tecniche basate su fasci di raggi x ad alta brillanza / High-brilliance X-ray techniques for oxide functionalization and characterization.

12) Caratterizzazione e funzionalizzazione di materiali innovativi mediante tecniche basate sull'uso di fasci ionici / Ion beam techniques for the characterization and functionalization of advanced materials

13) Materiali microporosi e nano-strutturati applicati in campo agronomico, agroalimentare e industriale. *(titolo di ricerca abbinato al posto in apprendistato con TEA SISTEMI S.r.l.)*

14) Sintesi e caratterizzazione di leganti, complessi a base di Rame e nanostrutture correlate per l'ossidazione selettiva del legame C-H. / Synthesis and characterization of ligands, copper-based complexes and related nanostructures for the selective oxidation of C-H bond. *(referente: Claudia Barolo) (titolo di ricerca abbinato a borsa di studio finanziata dal Dipartimento di Chimica / research project linked to the scholarship funded by Department of Chemistry)*

15) Studio di catalizzatori microporosi a base di Cu per comprendere la natura dell'attivazione del legame C-H. / Study of Cu-based microporous catalysts to understand the nature of C-H bond activation. *(tutor: Silvia Bordiga) (titolo di ricerca abbinato a borsa di studio finanziata dal Dipartimento di Chimica / research project linked to the scholarship funded by Department of Chemistry)*

16) Caratterizzazione spettroscopica di catalizzatori SCR a base di vanadio supportato su TiO2. / Spectroscopic characterization of VOx/TiO2 based SCR catalysts (Tutor: Gloria Berlier)

17) Sintesi e applicazione di carborani funzionalizzati per il trattamento del mesotelioma e dei tumori toracici diffusi. / Synthesis and applications of functionalized carboranes for the treatment of Mesothelioma and diffused thoracic tumours. (Tutor: Annamaria Deagostino)

18) Tecniche estrattive e analitiche per la caratterizzazione, quantificazione e valorizzazione di metaboliti vegetali tramite spettrometria di massa. / Extraction and analytical techniques for the characterization, quantification and valorization of plant metabolites by mass spectrometry. *(titolo di ricerca abbinato a posto in apprendistato presso BIOSFERED S.r.l. / research project linked to the apprenticeship position for BIOSFERED S.r.l.)*

19) Surface phenomena at supported metal nanoparticles: an integrated experimental and theoretical approach / Fenomeni alla superficie di particelle metalliche supportate: un approccio integrato tra esperimenti e teoria. *(Tutor: Elena Clara Groppo) (titolo di ricerca abbinato a borsa di studio finanziata da INSTM / research project linked to the scholarship funded by INSTM)*

20) Metodi quanto-meccanici per lo studio di solidi: sviluppo e implementazione nel programma CRYSTAL / Quantum-Mechanical Methods for the Study of Solids: development and Implementation in the CRYSTAL Program *(Tutor: S. Casassa)*

21) Approcci innovativi per purificazione di aria in ambienti chiusi basati su fotocatalisi in luce visibile / New approaches for in-door air purification based on visible-light photocatalysis *(Tutor: S. Livraghi)*

22) Caratterizzazione quali-quantitativa di potenziali biomarcatori metabolici via cromatografia-spettrometria di massa / Characterization and quantification of metabolism biomarkers via chromatography-mass spectrometry *(Tutor: C. Medana)*

23) Materiali innovativi per dispositivi fotovoltaici emergenti / Innovative materials for emerging PV *(tutor: C. Barolo) (*scholarships granted by foreign institution - *Costa Rica)*

24) Metodi avanzati per la caratterizzazione topografica di superficie di materiali di interesse automobilistico / Advanced methods for surface topography characterisation in automotive materials. *(tutor: Ettore Vittone) (titolo di ricerca abbinato a borsa finanziata dal Dipartimento di Chimica, con parte dei fondi provenienti da CRF / research project linked to the scholarship funded by Dipartimento di Chimica, co-fudend by CRF)*

25) Studio di materiali ed interfacce elettrochimiche per celle al litio ione mediante metodi quantomeccanici. / Study of materials and electrochemical interfaces for lithium ion cells through quantum-mechanical methods. *(titolo di ricerca abbinato a borsa finanziata con fondi provenienti da CRF / research project linked to the scholarship funded by CRF)*