



## DECRETO RETTORALE N. 7584

Bando di concorso per l'ammissione al corso di Dottorato internazionale in Science presso l'Università Cattolica del Sacro Cuore - XXXVII ciclo – sede di Brescia

### IL RETTORE

- Visto lo Statuto dell'Università Cattolica del Sacro Cuore, emanato con decreto rettorale 24 ottobre 1996, e successive modifiche e integrazioni;
- visto il regolamento generale di Ateneo dell'Università Cattolica del Sacro Cuore, emanato con decreto rettorale 26 ottobre 1999, e successive modifiche e integrazioni;
- vista la legge 5 febbraio 1992, n. 104;
- visto il d.p.r. 9 maggio 1994, n. 487;
- visto il d.p.r. 28 dicembre 2000, n. 445;
- visto il d.lgs. 30 giugno 2003, n. 196;
- vista la legge 30 dicembre 2010, n. 240, in particolare l'art. 19;
- visto il decreto ministeriale n. 45 dell'8 febbraio 2013;
- vista la nota del Ministero dell'Università e della Ricerca, prot. n. 7403 del 16 marzo 2021 avente ad oggetto le 'Indicazioni operative sulle procedure di accreditamento dei Dottorati a.a. 2021/22 – XXXVII ciclo;
- visto il Regolamento UE 2016/679 in materia di protezione dei dati personali (*General Data Protection Regulation*), pubblicato sulla Gazzetta Ufficiale Europea del 4 maggio 2016;
- visto l'accordo per il corso di Dottorato internazionale in *Science* tra l'Università Cattolica del Sacro Cuore, la Katholieke Universiteit Leuven (Belgium), la Pontificia Universidad Católica de Chile Santiago (Chile) e l'University of Notre Dame du Lac - Notre Dame, Indiana (USA) datato 12 maggio 2016;
- visto il proprio decreto n. 3627 del 12 luglio 2017, recante: <<Modifiche al "Regolamento dei corsi di dottorato di ricerca e delle scuole di dottorato di ricerca dell'Università Cattolica del Sacro Cuore">>;
- visto il proprio decreto n. 6764 del 20 settembre 2020, recante: <<Modifiche al "Codice etico dell'Università Cattolica del Sacro Cuore">>;
- vista la delibera adottata dal Senato accademico, nell'adunanza del 10 maggio 2021;



- vista la delibera adottata dal Comitato direttivo, nell'adunanza del 19 maggio 2021;
- valutata l'opportunità di avviare le procedure selettive sotto condizione dell'accREDITamento e della verifica di mantenimento dei requisiti di accREDITamento da parte di ANVUR,

## DECRETA

### Art. 1

L'attivazione del corso di Dottorato Internazionale in Science - XXXVII ciclo, con sede amministrativa presso l'Università Cattolica del Sacro Cuore in accordo con la Katholieke Universiteit Leuven (Belgium), la Pontificia Universidad Católica de Chile Santiago (Chile) e l'University of Notre Dame du Lac - Notre Dame, Indiana (USA) secondo le disposizioni contenute nel documento allegato - in lingua inglese (*allegato 1*), quale parte integrante del presente decreto.

### Art. 2

La nomina dei membri del collegio dei docenti del corso di Dottorato di cui all'art. 1, i cui nominativi sono riportati in *allegato 2*, quale parte integrante del presente decreto.

Milano, 1° giugno 2021

**IL RETTORE**  
**(Prof. Franco Anelli)**  
F.to: F. Anelli

**IL DIRETTORE GENERALE**  
**(Dott. Paolo Nusiner)**  
F.to: P. Nusiner

**Call for applications for admission to the International PhD in Science at  
Università Cattolica del Sacro Cuore – XXXVII Cycle – Brescia campus**

**Art. 1**

**Opening**

This Call indicates the Coordinator, the partner universities, the duration of the course, the number of positions available and the number of scholarships granted by the partner Universities of the International PhD in Science.

Any further changes and / or additional information to the competition will be published on the site <https://progetti.unicatt.it/progetti-ateneo-bandi-e-concorsi-milano-piacenza-brescia#content>

International PhD in Science

Coordinator: Prof. Prashant V. KAMAT - University of Notre Dame, Indiana (United States of America).

Duration: 4 years.

Positions: 4

Funded positions: 4

Information: <https://scuoledidottorato.unicatt.it/phdschools/science-home?rdeLocateAttr=en>

Details of the positions (see also <https://scuoledidottorato.unicatt.it/phdschools/science-10695.html>):

**nr. 1 scholarship (joint research project between Università Cattolica del Sacro Cuore and University of Notre Dame, Indiana - USA) on “Machine learning applications to physics research”**

Background and motivation

This research project lays in the flourishing intersection between Computer Science and Physics. In last years it has been observed that machine learning is coming to hold a crucial position in fields of physical science ranging from particle physics to cosmology, quantum many-body physics, quantum computing, and chemical and material physics [1].

Examples of successful applications of machine learning techniques to physics research include, among others: discovering gravitational lenses [2], constructing effective variational many-body wavefunctions in interacting systems with long-range entanglement [3], identifying phase transitions from entanglement spectra [4], characterizing dynamical phases in closed quantum systems where statistical mechanics is not applicable [5], etc.

On the other hand, machine learning development can benefit from physics research, in particular for the understanding of internal operations. In fact, one of the major open

problems in machine learning is related to explainability, in particular with deep neural networks: these algorithms can perform very well in some tasks (e.g., classification) but it's difficult to understand exactly why, both in theory and in practice. Examples of how machine learning theoretical development can exploit physical research are the recent proposal of an explanation for the performance of deep learning based on renormalization group theory [6], and an approach to clustering based on statistical physics [7].

The goals of the present project are: exploring the connections between physics and computer science, developing ad hoc machine learning models for physics research, and proposing new techniques for explainable machine learning.

#### References

1. Carleo G. et al. Machine learning and the physical sciences. *Rev. Mod. Phys.* 91, 045002 (2019);
2. Huang, X. et al. Finding Strong Gravitational Lenses in the DESI DECam Legacy Survey. *ApJ* 894 78 (2020);
3. Carleo, G. and Troyer, M. Solving the quantum many-body problem with artificial neural networks. *Science* 355, 602 (2017);
4. van Nieuwenburg, E., Liu, YH. & Huber, S. Learning phase transitions by confusion. *Nature Phys* 13, 435–439 (2017);
5. Hsu, Y.-T., et al. Machine learning many-body localization: Search for the elusive nonergodic metal. *Phys. Rev. Lett.* 121, 245701 (2018);
6. E. De Mello Koch, et al. Is Deep Learning a Renormalization Group Flow?, *IEEE Access*, vol. 8, pp. 106487-106505, (2020);
7. Rose K, Gurewitz E, Fox GC. Statistical mechanics and phase transitions in clustering. *Phys. Rev. Lett.* 65, 945 (1990).

#### Candidate Profile

- Master's degree or comparable qualification in Computer Science, Computer Engineering, Physics, Mathematics or adjacent fields. The title must be obtained before October 31<sup>st</sup>, 2021;
- A strong interest for multidisciplinary research is required;
- Good knowledge of the English language, both spoken and written, is essential;
- Strong commitment, ability to work in a team, and eagerness for international mobility is desired.

#### Opportunities

- Experimental research participating to the international collaboration between Università Cattolica del Sacro Cuore (UCSC) and University of Notre Dame du Lac, Indiana (ND), USA, with at least one year spent in both institutions;
- Double degree opportunity (European title from Università Cattolica del Sacro Cuore (UCSC) and American title from University of Notre Dame, USA).

#### Supervisors

Prof. Marco L. Della Vedova, UCSC, Italy [marco.dellavedova@unicatt.it](mailto:marco.dellavedova@unicatt.it)

Prof. Yi-Ting Hsu, ND, USA [yhsu2@nd.edu](mailto:yhsu2@nd.edu)

**nr. 1 scholarship (joint research project between Università Cattolica del Sacro Cuore and University of Notre Dame, Indiana - USA) on “Large scale ozone risk assessment for vegetation, from past years to the end of the century under different climate change scenarios”**

Background and motivation

Ozone (O<sub>3</sub>) is a secondary pollutant that can cause visible injuries to vegetation in general, but also relative growth reductions in forest plants and crop yield losses in agricultural species<sup>1</sup>. The phytotoxic ozone dose (POD) index seems the best suited for the estimation of the impact of stomatal ozone deposition under future climate. The project will be focused on modeling activities aimed at defining an integrated procedure based on meteo-chemical data, spatialization techniques and deposition models to produce regional scale maps for the ozone risk assessment for vegetation in Europe.

The main goals of the project are:

- the calibration and validation of a model for the estimation of the phytotoxic ozone dose absorbed by vegetation (wheat and poplar will be used as reference receptors for crop and forest species, respectively) at 1km<sup>2</sup> resolution in non-complex terrain;
- the production of O<sub>3</sub> risk assessment maps for vegetation based on future climate change scenarios in order to outline possible mitigation strategies for the O<sub>3</sub> impacts.

The candidate is expected to acquire the knowledge in the fields of environmental data elaboration, atmospheric pollutants deposition, plant physiology and soil water dynamics modelling, risk assessment.

The candidate is also expected to proactively carry out the research project, interacting with the research groups of the supervisors and with external groups working on similar subjects.

References:

1. Emberson L., 2020. Effects of ozone on agriculture, forests and grasslands. *Phil. Trans. R. Soc. A.* 378: 20190327.

Candidate Profile

- Master’s degree or comparable qualification in Mathematics, Physics, Biology, Environmental sciences or adjacent fields. The title must be obtained before October 31<sup>st</sup>, 2021;
- Strong commitment, ability to work in a team, and eager for international mobility is required;
- A solid background in computer science, atmospheric physics and ecology;
- Good knowledge of the English language, both spoken and written, is essential;
- Documented experience and skills in data analysis, geostatistics and programming (i.e. MATLAB and Visual Basic).

Opportunities

- Perform modelling research in an interdisciplinary research environment and actively participate to the international collaboration between research groups in Italy and in Belgium with the aim of achieving a PhD under the joint supervision by ND and UCSC, with at least one year spent in both institutions;

- Gain didactical experience by being involved in teaching duties for a limited amount of time (e.g., guiding Bachelor and Master students with their experiments and research);
- Double degree opportunity.

Supervisors:

Prof. Giacomo Gerosa, UCSC, Italy, [giacomo.gerosa@unicatt.it](mailto:giacomo.gerosa@unicatt.it)

Prof. Paola Crippa, ND, USA, [pcrippa@nd.edu](mailto:pcrippa@nd.edu)

Dr. Riccardo Marzuoli, UCSC, Italy, [riccardo.marzuoli@unicatt.it](mailto:riccardo.marzuoli@unicatt.it)

**nr. 1 scholarships (joint research project cofounded between Università Cattolica del Sacro Cuore and the Italian Institute of Technology (IIT), Genova – Italy with the participation the University of Notre Dame, Indiana – USA) on “Colloidal nanoscale heterostructures for catalytic and optoelectronic applications”**

Background and motivation

The project aims to develop nanoscale heterostructures based on colloidal chemical approaches. The combination of different materials constituting such heterostructures will enable a fine control over the photoluminescence emission and/or carrier separation & dynamics for applications that can range from light emission, catalysis to memristors. Important steps of the project are the identification of suitable combinations of materials (also via modeling of the electronic properties), followed by their synthesis, characterization, and exploitation in devices. A critical aspect of the work will also be to engineer the heterointerface between materials at the nanoscale in order to prepare low-strain interfaces.

The target applications will determine the material design. In the case of catalytic applications, colloidal heterostructures should be designed in order to achieve a synergistic effect between component materials. This in turn can lead to different advantages: i) boosting the catalytic activity of the active material in the heterostructure; ii) increasing the catalyst stability; iii) allowing for a higher selectivity (the formation of a desired product with respect to other possible undesired side products); iv) increasing the range of possible catalytic products. On the other hand, heterostructures in which, for example, a shell material is grown on the top of a core material enhancing the carriers recombination in the latter, can be exploited in light emitting diodes and lasers. Finally, one possible future direction would be the synthesis of materials whose electronic behavior can be on/off triggered via light absorption. In this way the local change of electronic would allow a resistive switching behavior by means of complete light control to be applied in memristors.

Applications in catalysis and light emission will be carried out at the Italian Institute of Technology (IIT) in Genova (supervisors: prof. Liberato Manna and Dr. Luca De Trizio) and at Notre Dame University (ND) in collaboration with the group of prof. Prashant Kamat. Applications in memristors will be carried out in collaboration with the group of prof. Luca Gavioli at Università Cattolica (UCSC) in Brescia.

### Candidate Profile

- Master's degree or comparable qualification in Chemistry, Materials Science or Physics. The title must be obtained before October 31<sup>st</sup>, 2021;
- A strong interest for multidisciplinary research is required;
- Candidates should have a solid background in Chemistry, Materials Science or Physics;
- Good knowledge of the English language, both spoken and written, is essential;
- Strong commitment, ability to work in a team, and eagerness for international mobility is desired.

### Opportunities

- Experimental research participating to the international collaboration between IIT, ND, and UCSC, with at least one year spent at ND;
- Double degree opportunity (European title from UCSC and American title from ND);
- The fellowship co-financed by IIT and UCSC amounts to 1500 euros/month net.

### Supervisors

Prof. Luca Gavioli, UCSC, Italy, [luca.gavioli@unicatt.it](mailto:luca.gavioli@unicatt.it)

Prof. Prashant Kamat, ND, USA, [pkamat@nd.edu](mailto:pkamat@nd.edu)

Prof. Liberato Manna, Italian Institute of Technology (IIT), Genova, Italy, [liberato.Manna@iit.it](mailto:liberato.Manna@iit.it)

Dr. Luca de Trizio, Italian Institute of Technology (IIT), Genova, Italy, [luca.detrizio@iit.it](mailto:luca.detrizio@iit.it)

**nr. 1 scholarships (joint research project cofounded between Università Cattolica del Sacro Cuore and the Italian Institute of Technology (IIT), Genova – Italy with the participation the University of Notre Dame du Lac, Indiana – USA) on “Study of Cooperative Optical Phenomena in Artificial Solids of Nanocrystalline Metal Halides”**

### Background and motivation

Light-emitting nanocrystals of metal halides provide an opportunity to engineer artificial solids with a cooperative emission. Such solids, known as colloidal nanocrystal superlattices, are a promising platform for applications in quantum photonics and information science. The project will address two important aspects of colloidal nanocrystal superlattices and light emission from them.

First, there is a need to discover single- and multi-component nanocrystal solids made of recent generations of colloidal nanocrystals that include (but are not limited to) lead halide perovskites, lead-free double perovskites, and lead chalcogenides. Despite rapid progress in synthesis and optimization of such nanocrystals, little is known about the diversity of colloidal superlattices that they can form.

Second, there is a need to investigate the cooperative response of such superlattices upon interaction with optical excitation. For example, there are preliminary indications that pulsed laser excitation of cesium lead bromide nanocrystals produces intensity-

dependent oscillations and acceleration of radiative decay. Such response could be indicative of cooperative effects, whether that is the case is not well understood.

In the present project we will combine state-of-the-art facilities in the partner institutions. The synthesis and characterization of the colloidal superlattices will be carried out at the Italian Institute of Technology (IIT) in Genova (supervisors: prof. Liberato Manna and Dr. Dmitry Baranov). The investigation of collective and cooperative phenomena in colloidal superlattices will be carried out in collaboration with the group of prof. Claudio Giannetti at Università Cattolica (UCSC) in Brescia and in collaboration with the group of prof. Masaru Kuno at Notre Dame University (ND). A specific multidimensional optical spectroscopy setup will be developed @UCSC to investigate the decoherence dynamics of optical excitons and hunt for evidence of changes in the ultrafast decoherence driven by cooperative phenomena.

The main goals of the project are:

- Synthesis and characterization of novel colloidal superlattices
- Investigation of collective and cooperative phenomena in colloidal superlattices excited by tunable ultrafast light pulses in the weak and strong excitation regimes to manage cooperative absorption and emission on ultrafast timescales.

#### Candidate profile

- Master's degree or comparable qualification in Physics, Materials Science or Chemistry. The title must be obtained before October 31<sup>st</sup>, 2021;
- A strong interest for multidisciplinary research is required;
- Candidates should have a solid background in Chemistry, Materials Science or Physics;
- Good knowledge of the English language, both spoken and written, is essential.
- Strong commitment, ability to work in a team, and eagerness for international mobility is desired.

#### Opportunities

- Experimental research participating to the international collaboration between IIT, ND, and UCSC, with at least one year spent at ND;
- Double degree opportunity (European title from UCSC and American title from ND);
- The fellowship co-financed by IIT and UCSC amounts to 1500 euros/month net.

#### Contacts:

Prof. Liberato Manna (IIT) Italy, [Liberato.Manna@iit.it](mailto:Liberato.Manna@iit.it)

Dr. Dmitry Baranov (IIT) Italy, [Dmitry.baranov@iit.it](mailto:Dmitry.baranov@iit.it)

Prof. Masaru Kuno (ND) USA, [mkuno@nd.edu](mailto:mkuno@nd.edu)

Prof. Claudio Giannetti (UCSC) Italy, [claudio.giannetti@unicatt.it](mailto:claudio.giannetti@unicatt.it)

## **Art. 2**

### **Assessment procedure**

The comparative evaluation of candidates applying to the International PhD in Science aims to discern the candidate's aptitude for and interest in the scientific research



proposed in the Research Program. The examination panel reserves the right to ask for an online interview.

### **Art. 3**

#### **Admission requirements**

Application for participation in the competition, with no restrictions with respect to age and nationality, is open to candidates holding a Master's degree, or an Italian university degree obtained under the education system prior to Italian Ministerial Decree no. 509 of November 3<sup>rd</sup>, 1999 or a second-level university qualification obtained abroad and deemed eligible.

Application for participation is also open to candidates due to obtain one of the above-mentioned qualification by October 31<sup>st</sup>, 2021. In this case, examination candidates shall provide the Examination Panel with a self-declaration form attesting graduation or a qualification from a foreign university. Failure to do so will be cause for invalidation of the application.

Italian, EU and non-EU candidates that obtained, or will obtain, a qualification abroad, by October 31<sup>st</sup>, 2021, for the sole purpose of admission to the PhD Programme shall request recognition of its eligibility in the PhD Programme application form. To this end, the application shall be accompanied with appropriate documentation to enable the Examination Panel to rule on the request for eligibility.

### **Art. 4**

#### **Application form**

Candidates who intend to participate to the competition must submit an application to the Rector of Università Cattolica del Sacro Cuore by Monday, August 23<sup>rd</sup>, 2021.

The application form is available at <https://progetti.unicatt.it/progetti-ateneo-bandi-e-concorsi-milano-piacenza-brescia#content> until 2 pm (CEST) of the expiration date of the present public announcement.

In the application form, to be filled in English and online only, candidates shall declare under their responsibility:

- The choice of at least one of the 4 research topics established by Università Cattolica del Sacro Cuore;
- personal information: surname, first name, fiscal code (for Italian nationals only), date and place of birth, citizenship, residence and domicile elected for the purposes of the competition;
- for graduate students: qualification, date it was obtained and name of the conferring university;
- foreign languages known besides English.

Candidates must complete their application with the following documents – upload format .pdf or .jpg:

- a detailed *curriculum vitae* written in English;

- self-certified Master's degree document with final mark and exams transcript, or certification of qualification obtained abroad with final mark and exams transcript translated in English. A self-certified translation will be accepted for the purpose of selection;
- certification of any other qualification, such as postgraduate and advanced specialisation degrees, obtained in Italy and/or abroad; a copy of any other qualification considered useful for the purposes of the comparative evaluation. The documentation must be translated in English. A self-certified translation will be accepted for the purpose of selection;
- a list of the publications deemed useful for the purposes of the comparative evaluation;
- an identification document, duly signed;
- fiscal code (for Italian nationals only);
- card-size photograph;
- students with a degree obtained or to be obtained in NON-EU countries shall provide a translation, authentication and a certificate of equivalence of qualification of their foreign degree certificates, issued by the Italian Consulate/Embassy representative offices in the countries where they have obtained/will obtain the degree.

Candidates may also preferably complete their application with the following documents:

- two references letters written in English. The letters shall be sent directly by the writer to the [phd.science@unicatt.it](mailto:phd.science@unicatt.it) within the date of expiration of the present public announcement;
- for non-native speakers of English, a certificate attesting adequate proficiency in English, such as:
  - FCE;
  - CAE;
  - CPE;
  - BEC
  - *British Chamber of Commerce*;
  - *Trinity College*;
  - TOEFL;
  - IELTS;
  - or certificate of the kind deemed useful to prove proficiency in English.

In case of absence of an adequate English proficiency certificate, the Examination panel will verify the English proficiency during the oral interview.

The application is complete and valid only after having paid the participation fee of € 100.00 (non-refundable) for the selection to be paid online by credit card after uploading the .pdf of the application, which it is generated at the end of the upload path of all documents.

To confirm the successful registration to the selection exam, the candidate will receive

a confirmation email from the Università Cattolica del Sacro Cuore Doctorates Office.

The University reserves the right to adopt measures for the exclusion of candidates who do not have the prerequisites required or did not comply with the indications of the public announcement, also after the competition-related examinations have taken place.

Candidates with disabilities, in order to attend the selection examination, must specify in their application the aid required in relation to their disability, in accordance with Italian Law no. 104 of February 5<sup>th</sup>, 1992.

#### **Art. 5**

##### **Examination Panel**

The Examination Panel of the comparative evaluation for admission to the PhD Programme in Science is appointed by Rector's Decree for the competition-related examinations.

For each project/scholarship published within the present call, the Examination Panel will consist of three academics/researchers pertaining respectively to the PhD Research topic.

The composition of the Panels will be published, after the expiration date of the present public announcement, at <http://dottorati.unicatt.it/concorsi-milano>

In a preliminary meeting the Examination Panels shall define the criteria for the comparative evaluation necessary for a single merit-based ranking to be drawn up. These criteria will be published, as by law enacted, at <https://progetti.unicatt.it/progetti-ateneo-bandi-e-concorsi-milano-piacenza-brescia#content>

#### **Art. 6**

##### **Admission to PhD Programmes**

Candidates are admitted to the International PhD in Science according to the ranking, until the established number of positions have been filled.

The results of the competition in the form of a single merit-based ranking will be published at <https://progetti.unicatt.it/progetti-ateneo-bandi-e-concorsi-milano-piacenza-brescia#content>

#### **Art. 7**

##### **Enrolment**

The winners of the competition must complete the registration within 7 days starting from the day following the one in which the related email with the invitation will be received, by accessing the following website: <https://iscrizioni.unicatt.it/iscrizioni/>

#### **Art. 8**

##### **Aid and studentships**

Tuition fees for the International PhD in Science at Università Cattolica del Sacro Cuore are set annually by the Board of Directors.

PhD students are required to pay tuition fees annually amounting to €1,516.00, to be

paid in three instalments: the first (of € 516.00) upon enrolment, the second (of € 500.00) by February 28<sup>th</sup>, and the third (of €500.00) on June 30<sup>th</sup> each year.

For the Italian law, a scholarship on the PhD programme is compatible with other income (also earned on a regular basis) in the calendar year of the scholarship, provided that such income does not exceed the scholarship itself. Should these income limits be surpassed, the scholarship shall be revoked for the year in question. Students with scholarships shall annually declare the income and notify of any excess of the prescribed limits.

The scholarships are renewed annually, provided that the PhD students have completed the programme of activities set for the previous year.

#### Scholarships founded by Università Cattolica del Sacro Cuore

The amount of the scholarship, paid in monthly instalments, is € 15.343,28 per year, before social security charges. The scholarship is subject to the payment of social security contributions (INPS separate management) pursuant to Art. 2, Paragraph 26, of Italian Law 335 dated of August 8th, 1995, and subsequent amendments. The scholarship is exempt from local income tax and personal income tax (IRPEF).

The scholarship amount shall be increased by max. 50 percent, for a period not exceeding 18 months, if the PhD student is authorised by the Teaching Panel to conduct research abroad.

Starting from the second year, to each PhD student, with or without a scholarship, is granted an annual sum covering research activities in Italy and abroad amounting to 10 percent of the annual gross amount of the scholarship, equal to €1.534,33.

#### Scholarships cofounded between Università Cattolica del Sacro Cuore and the Italian Institute of Technology (IIT)

The amount of the scholarship, paid in monthly instalments, is € 20.318,32 per year, before social security charges. The scholarship is subject to the payment of social security contributions (INPS separate management) pursuant to Art. 2, Paragraph 26, of Italian Law 335 dated of August 8th, 1995, and subsequent amendments. The scholarship is exempt from local income tax and personal income tax (IRPEF).

The scholarship amount shall be increased by max. 50 percent, for a period not over 18 months, if the PhD student is authorised by the Teaching Panel to conduct research abroad.

Starting from the second year, to each PhD student, with or without a scholarship, is granted an annual sum covering research activities in Italy and abroad amounting to 10 percent of the annual gross amount of the scholarship, equal to €2.031,83.

### **Art. 9**

#### **Public employees**

Current Italian legislation on leave of absence or special leaves applies to public employees admitted to International PhD in Science.

## **Art. 10**

### **Incompatibility**

Attendance of the PhD Programme is not compatible with enrolment in other study programmes, postgraduate schools (except for medical specialisation schools), and other PhD Programmes (except in the case of joint dissertation supervision agreements).

## **Art. 11**

### **Obligations of PhD students**

PhD students are required to take part regularly in the activities set out in their curricula, and to commit to the regulatory norms of their University of enrolment.

## **Art. 12**

### **Conferment of PhD degree**

The procedure of PhD degree conferment is governed by the regulatory norms of the University of enrolment.

## **Art. 13**

### **Public disclosure**

This public announcement is published on the Euraxess European website, on the MIUR website and at: <https://progetti.unicatt.it/progetti-ateneo-bandi-e-concorsi-milano-piacenza-brescia#content>

## **Art. 14**

### **Final provisions**

For any matter not explicitly contemplated in this public announcement, the provisions indicated in the Regulatory Norms of the University of PhD students' enrolment shall apply.

Head of the procedure of the present selection is Dr Roberto BRAMBILLA, Director of Postgraduate Education and Research Partnership, Via Carducci 28/30, Milan, Italy.

Nomina dei membri del collegio dei docenti del corso di Dottorato internazionale in *Science*, con sede amministrativa presso l'Università Cattolica del Sacro Cuore in accordo con la Katholieke Universiteit Leuven (Belgium), la Pontificia Universidad Católica de Chile Santiago (Chile) e l'University of Notre Dame du Lac - Notre Dame, Indiana (USA), – ciclo XXXVII

Collegio dei docenti:

- Prof. Prashant V. KAMAT - University of Notre Dame du Lac, Indiana  
– Coordinatore;
- Prof. Luca GAVIOLI, Università Cattolica del Sacro Cuore;
- Prof. Marco SQUASSINA, Università Cattolica del Sacro Cuore;
- Prof. Claudio GIANNETTI, Università Cattolica del Sacro Cuore;
- Prof. Mauro SPERA, Università Cattolica del Sacro Cuore;
- Dott. Riccardo MARZUOLI, Università Cattolica del Sacro Cuore;
- Dott. Marco Luigi DELLA VEDOVA, Università Cattolica del Sacro Cuore;
- Prof. Francesco BANFI, Università di Lione (FRANCIA);
- Prof. Alejandro CABRERA, Pontificia Università del Cile (CILE);
- Prof.ssa Patricia CLARCK, University of Notre Dame du Lac, Indiana; (STATI UNITI D'AMERICA);
- Prof. Steven DE FEYTER, Università Cattolica di Lovanio (BELGIO);
- Prof. Giuseppe DE NITTIS, Pontificia Università del Cile (CILE);
- Prof. Jan ELSEN, Università Cattolica di Lovanio (BELGIO);
- Prof. Mario FAVRE, Pontificia Università del Cile (CILE);
- Prof. Greg HARTLAND, University of Notre Dame du Lac, Indiana;
- Prof. Boldizsar JANKO, University of Notre Dame du Lac, Indiana;
- Prof. Masaru KUNO, University of Notre Dame du Lac, Indiana;
- Prof. Walter LUYTEN, Università Cattolica di Lovanio (BELGIO);
- Prof. Jeronimo MAZE, Pontificia Università del Cile (CILE);
- Prof. Enrique MUNOZ, Pontificia Università del Cile (CILE);
- Prof. Lino PEREIRA, Università Cattolica di Lovanio (BELGIO);
- Prof.ssa Sylwia PTASINSKA, University of Notre Dame du Lac, Indiana;
- Prof. Riccardo RAABE, Università Cattolica di Lovanio (BELGIO);
- Prof.ssa Flavia ZACCONI, Pontificia Università del Cile (CILE);
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