

**Research fellowship on “Valorisation of lignocellulosic biomass into catalysts and multifunctional materials” - Università Ca' Foscari Venezia**  
(Italian law 30 December 2010, n.240, art. 22 and subsequent amendments and additions)

The present document in English is to be considered as a mere summary of the main provisions of the notice of competition which is available in Italian at the following ([link](#)) The text in Italian is the official text of the notice of competition for all legal intents and purposes and, in the event of non-conformity with the present document, it shall prevail.

## Description

The Department of Molecular Sciences and Nanosystems at Università Ca' Foscari Venezia invites applications for a fellowship titled “**Valorisation of lignocellulosic biomass into catalysts and multifunctional materials**“, SSD: CHIM/03, project PRIN 2022 titled “ENhanced CAlytic fractionation and depolymerization Processes for a Straightforward valorization of lignocellulosic biomass to chemicals and mATERials (ENCAPSULATE, 2022KTAH2L)”, CUP H53D23004680006, tutor and principal investigator: Dr. Massimo Sgarzi.

The fellowship is intended to provide the successful candidate with the opportunity to pursue his/her own research while benefiting from the range of expertise at Università Ca' Foscari Venezia.

**Abstract:** Lignocellulosic biomass (L-Bio) represents the most abundant renewable raw materials on earth with an estimated production of about 10 billion t/y. In this context, the full exploitation of nonedible, 2nd generation L-Bio plays a pivotal role in the transition from a linear economy to a circular, more sustainable and carbon-neutral society, thus limiting the current dependence on fossil resources without affecting the food production chain.

This project aims at the valorization of cellulose and lignin composing L-Bio with the goal of preparing catalysts and multifunctional materials. In particular, the following tasks will be performed:

- In-depth characterization (GPC, HSQC, 31P-NMR, DSC, TGA) and fractionation of lignin oils deriving from L-Bio;
- Preparation of cellulose-based and lignin-based composites for the support of silver and iron nanoparticles as catalysts for flow reduction processes of nitrophenols;
- Preparation and characterization (DLS, LDA, zeta potential, SEM) of lignin-based capsules for the release of active ingredients;
- Preparation and characterization (SEM, TEM, EDX, XRD, XPS, ATR-FTIR) of multifunctional nanocomposites based on cellulose nanofibrils and lignin carbon dots for water remediation purposes;
- Preparation and characterization (TGA, ATR-FTIR, DSC) of lignin-based nanolubricants.

The work will take place at the Department of Molecular Sciences and Nanosystems of the Ca' Foscari University of Venice.

## Who can apply

Prospective candidates are expected to hold a **Master's degree in the field of chemical sciences** (or equivalent) or equivalent qualification obtained abroad and professional scientific.

curriculum suitable for carrying out research activities.

Ca' Foscari encourages applications from researchers with positive evaluation in all the criteria in individual proposals such as Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar.

Researchers having successfully completed Marie Skłodowska Curie Actions - Individual Fellowships/ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) or similar funded projects are warmly encouraged to apply.

**The following qualifications are considered as evaluation criteria:**

- a. holding a PhD;
- b. having completed the attendance of a PhD programme, although not having yet obtained the PhD title;
- c. specialisation diplomas and attendance certificates at post-graduate specialisation courses, obtained both in Italy or abroad, documented research activity in public and private organisations with contracts, study grants or assignments both in Italy and abroad.

**Duration of contract: 18 months**, approximately starting: in **January 2024**.

**Stipend:** The research fellowship amounts to **€ 20.234,00 Euros** gross to the recipient per year, net of the expenses to be sustained by the Provider.

**Deadline for submission of applications: 23<sup>th</sup> November 2023, at 12.00 noon.**

**How to apply:**

Candidates shall submit:

1. The application form;
2. A motivation letter (max 1 page) along with their CV in European format, duly dated and signed, both to enclosed as a one single.pdf file ([link](#)); a declaration must be appended in the footnote of the curriculum, pursuant to the Italian DPR 445/2000 and subsequent amendments and additions, that the information provided corresponds to the truth. Moreover the candidates have to consent to the use of their personal data for the purposes of this selection procedure pursuant to the Italian Legislative Decree 196/2003 and to the EU Regulations 2016/679;
3. The attachments called “obligations and understanding” and “participation and compatibility”;
4. All documents, qualifications and publications relevant for the selection procedure (please, see the notice - [link](#));
5. A copy of a valid identity document (either Identity Card or Passport);
6. (If available) Evaluation Summary Reports of Marie Skłodowska Curie Actions - Individual Fellowships/ ERC Starting Grants/FIRB (Italian Fund for basic research investments)/SIR (Scientific Young Independence Research) individual proposals having passed all the evaluation thresholds;
7. (If available) Details of Marie Skłodowska Curie Actions - Individual Fellowships, ERC Starting Grants, FIRB (Italian Fund for basic research investments)/ SIR Scientific Young Independence Research funded projects;

8. Declaration on availability to held the interview in remote (Link) to be send via email at the following address: [ricerca.dsmn@unive.it](mailto:ricerca.dsmn@unive.it)

All the schemes of the quoted documentation are available on the website (link).

**Incomplete applications will be rejected.**

### **How to submit your application**

Applications should be submitted by the online procedure, available on this link:

<https://apps.unive.it/domandeconcorso-en/accesso/dsmnsgarziar2023prin22>

The candidate, after the uploading, will receive a submission number and an e-mail acknowledging receipt of his/her application.

The candidate if necessary could access the procedures for updating any data and materials by the link provided by the e-mail, in any case any updates must be made no later than the deadline 27<sup>th</sup> November 2023, at 12.00 noon.

Please note that the University can be contacted for any support needs by the candidate until 24 hours prior to the deadline.

Please note that in case of an high number of applications and / or weight of the materials loaded by the candidates the system might become slower, Therefore it is suggested not to start the process close to the deadline.

**NB:** the University does not take on responsibility for wrong or late communication of addresses, nor for any communication problem not depending on the University.

### **Topics of the interview:**

- Morphological, compositional, dimensional and thermal characterization of lignocellulosic materials;
- Methods for the preparation of nanocomposites, lignin-based carbon dots and cellulose nanofibrils;
- Assessment of the knowledge of the foreign English language through the conduct of part of the interview in English;
- Assessment of the Italian language for foreign candidates.

### **Evaluation**

Up to 100 points, specifically:

For qualifications, publications and possible tests, from 0 to 60;

For interview, from 0 to 40.

## Selection procedure

**The interview will be on 04/12/2023 at 09:00 a.m.**

**The interview will be held in remote at the link:**

[meet.google.com/xew-khvd-yrd](https://meet.google.com/xew-khvd-yrd)

## Information and contacts

Candidates may find further details about the application process and the research project in the official call published on the following ([link](#))

For further information please contact the Research Office, email: [ricerca.dsmn@unive.it](mailto:ricerca.dsmn@unive.it), Ph: 0412348633/8514.

La Vice-Direttrice del Dipartimento  
di Scienze Molecolari e Nanosistemi  
Prof.ssa Patrizia Canton  
f.to digitalmente ex art.24 Dlgs 82/2005 (CAD) e ss.mm.ii.

VISTO La responsabile del procedimento  
La Segretaria del Dipartimento di Scienze Molecolari e Nanosistemi  
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