UNIVERSITY OF PADOVA - CENTRE FOR MECHANICS OF BIOLOGICAL MATERIALS

SELECTION ANNOUNCEMENT FOR THE AWARDING OF 2 (TWO) RESEARCH FELLOWSHIPS ENTITLED:
NEXT-GENERATION REDOX FLOW BATTERIES: PREPARATION, CHARACTERIZATION AND TESTS IN PRO-
TOTYPE DEVICES OF FUNCTIONAL COMPONENTS AND INNOVATIVE ARCHITECTURES
(BATTERIE A FLUSSO DI NUOVA GENERAZIONE: PREPARAZIONE, CARATTERIZZAZIONE E TEST IN DISPO-
SITIVI-PROTOTIPO DI COMPONENTI FUNZIONALI ED ARCHITETTURE INNOVATIVE)

Decree no. 15/2018 Ref. no. 48 December 19th, 2018

Candidates shall also refer to the forms and documentation related to the selection announcement
available at the links hereunder:

http://www.cmbm.unipd.it/
http://protocollo.unipd.it/albo/albo.html

Having regard to par. 4 of Art. 80 of the University’s “Regolamento di Ateneo per l’amministrazione, la finanza e
la contabilità” (Regulations Governing Administration, Finance, and Accounting) and “Regolamento delle borse
per lo svolgimento di attività di ricerca”, (Regulations Governing Research Fellowships) a selection announce-
ment has been published for the awarding of 2 (two) research fellowships at the Centre for Mechanics of Bio-
logical Materials under the supervision of Professor Vito Di Noto, Research Project Supervisor.

Each research fellowship shall last for 12 (twelve) months.

Each research fellowship shall be for a total amount of € 19,000.00 (nineteen-thousand/00) financed by
DI_N_EPPR18_01 and will be paid in deferred monthly instalments.

The Research Fellowship Holder must carry out the following research activity:

The research activities to be carried out in the framework of the two scholarships entitled: “Next-generation
redox flow batteries: preparation, characterization and tests in prototype devices of functional components and
innovative architectures” (Batterie a flusso di nuova generazione: preparazione, caratterizzazione e test in dispositivi-prototipo di componenti funzionali ed architetture innovative) will be divided into two phases.

In the first phase, the holders of the scholarships will execute a broad campaign to prepare and characterize redox
couples, membranes and electrode materials. The studies focused on the membranes and on the redox couples
will be carried out by means of: (a) vibrational spectroscopies (FT-MIR, FT-FIR, confocal micro-Raman);
(b) thermoanalytical techniques (HR-TG, MDSC, DMA); and (c) electrical measurements (broadband electrical spectroscopy). In the case of electrode materials, particular attention will be devoted to systems including supports based on carbon, graphene and graphene-related materials. These support will be conceived to operate effectively even in a broad range of pH values; they will be synthesized through advanced methodologies. They will undergo an extensive measurement campaign meant to study their chemical composition, morphology and structure. In the second phase, the holders of the scholarship will implement the functional components developed in the first phase of the activities in prototypes of redox flow batteries exhibiting innovative architectures. These prototypes will undergo an extensive campaign of tests aimed at determining their performance and durability in operative conditions.

Le attività di ricerca da svolgere nell’ambito delle due borse di studio intitolate “Batterie a flusso di nuova generazione: preparazione, caratterizzazione e test in dispositivi-prototipo di componenti funzionali ed architetture innovative” si svolgeranno in due fasi principali.
Nella prima, i borsisti effettueranno un’estesa campagna di preparazione e caratterizzazione di coppie redox, membrane e materiali elettrodici. Gli studi relativi a membrane e coppie redox saranno effettuati mediante: (a) spettroscopie vibrazionali (FT-MIR, FT-HIR, micro-Raman confocale); (b) tecniche termoanalitiche (HR-TG, MDSC e DMA); e (c) misure elettriche (spettroscopia elettrica a banda larga, BES). Nel caso di materiali elettrodici si studieranno sistemi dotati di supporti a base di carbone, grafene e di derivati del grafene. Questi supporti saranno concepiti per operare in modo ottimale in intervalli anche molto ampi di pH e la loro sintesi sarà condotta mediante metodologie d’avanguardia. Essi andranno incontro ad un’estesa campagna di misure aventi l’obiettivo di studiarne composizione chimica, morfologia e struttura.
Nella seconda fase i borsisti implementeranno le componenti funzionali sviluppate nella prima fase delle attività in prototipi di batterie a flusso dotati di architetture innovative. Tali prototipi andranno incontro ad un’estesa campagna di test volti a determinarne prestazioni e durabilità in condizioni operative.

Admission Requirements

Specialization degree (a second level degree - D.M. 509/99 and D.M. 270/04) in Chemistry, Industrial Chemistry, Materials Science, Materials Engineering or equivalent. The eligibility of qualifications awarded abroad will be verified by the Selection Committee.
Required skills
- Knowledge of English;
- Computer skills: word-processing software and data elaboration packages;
- Synthesis and characterization of nanostructured systems, electrochemical techniques.
- Scientific publications;
- Study and research activity in the field of the topic of this research fellowship.

Incompatibility
The fellowships within this announcement may not be combined with:
- other research grants ;
- fellowships of any other kind, with the exception of those awarded by national or foreign institutes to integrate, with periods abroad, the specific research activities required by this announcement.

In the case of self-employed, employed or parasubordinate employed, compatibility shall be determined by the Research Project Supervisor.

Research Fellowship Holder may not have marriage, family or kinship relationships up to the fourth degree with lecturers or researchers working at the Department elected as "Research Base", or with Rector, or Director General, or a member of the University Board of Governors.

Procedures for submission of application form
The deadline for submitting the application form is March 7, 2019 at 13:00.
The application form to use is available at the link indicated on the selection announcement and on the link available on the Center's website:
http://www.cmbm.unipd.it/
http://protocollo.unipd.it/albo/albo.html

Alternatively, it can be submitted as follows:
1) delivered in person to Monica Cavicchi Centre for Mechanics of Biological Materials at the following address: via Marzolo no. 9 CAP 35131 Padova Italy on the following days: from Monday to Friday (from 09:00 to 13:00);
2) posted by registered mail with advice of receipt to the following address:
Monica Cavicchi Centre for Mechanics of Biological Materials via Marzolo no. 9 CAP 35131 Padova Italy.

Should the application be sent by registered letter, the postmark will not be accepted as evidence of meeting the application deadline. The date of receipt will be taken into account.

Therefore, the application must reach the office before the deadline of this selection announcement.

3) sent by certified e-mail (PEC) to: centro.cmbm@pec.unipd.it

The envelope or subject heading of the email must indicate the following: "Selection Announcement for the Awarding of Research Fellowship on Next-generation redox flow batteries: preparation, characterization and tests in prototype devices of functional components and innovative architectures ".

The application must include:

a) A dated and signed Europass CV, available at the link indicated on the selection announcement;

b) a photocopy of a valid identity document (Identity Card or Passport);

c) any other document, qualification or publication useful for the selection process.

Selection procedure

Candidates' applications shall be evaluated by a Selection Committee that will be nominated in accordance with the "Regulations Governing Research Fellowships," on the basis of their qualifications and interview.

Prior to assessing candidates, the Selection Committee shall establish the maximum score, criteria and the procedure to be used in evaluating qualifications, the methods and criteria for the interview.

Candidates permanently resident abroad may participate to the interview using electronic means.

The interview, that can also be held in videoconference, is set to be held on March 11, 2019 at 10:00 (Prof. Vito Di Noto, via Marzolo no. 9 CAP 35131 Padova Italy tel +390498275229 - c-mail: vito.dinoto@unipd.it).

Any changes will be communicated to the participants via e-mail.

At the end of the selection process, the Selection Committee shall send the report to the Head of the Centre for approval. After verifying the legality of the deeds, the Head of the Center shall approve by decree the ranking order and the awarding of the research fellowship. The administrative office of the Center that issued the selection announcement shall notify the successful candidate.

The winner must accept the award within ten days of notification. Otherwise the winner shall forfeit the right to
the research fellowship. In case of renunciation, the fellowship will be awarded to the next eligible candidate, according to the ranking order.

The ranking order will be published on the Centre for Mechanics of Biological Materials’s web page at the following address:
http://www.cmbm.unipd.it/
http://protocollo.unipd.it/albo/albo.html.

Return of Documents and Publications
Any documents and publications sent to the University can be returned at the applicant’s expense after two months from the completion of the selection process, subject to any ongoing litigation.

Processing of personal data
In accordance with Legislative Decree no. 196 dated 30 June 2003 and s.m.i., it is hereby stated that any data provided, in print or electronic format, shall be handled only for the purposes of this announcement and the entering into and managing of the relationship with the University.

The person responsible for administrative proceedings
In accordance with Art. 5 of Law no. 241 dated 7 August 1990, the person responsible for the selection process (RPA) is Dr.ssa Tiziana Pampanin who can be reached at the e-mail address: tiziana.pampanin@unipd.it and telephone no. +39 049 8275422.

Final provisions
For anything not specified in this selection announcement, see the University of Padova’s current regulations regarding the awarding for research fellowships.

Padova, 25/02/2019

The Head of Center of
Centre for Mechanics of Biological Materials
Prof. Raffaele De Caro
(firmato digitalmente)