



Università  
Ca' Foscari  
Venezia

Dipartimento di Scienze  
Molecolari e Nanosistemi

Dipartimento di Scienze Molecolari e Nanosistemi  
Università Ca' Foscari Venezia  
Campus Scientifico – Via Torino 155, 30170 Mestre (VE)  
P.IVA 00816350276 - CF 80007720271  
[www.unive.it/dsmn](http://www.unive.it/dsmn)

**Research fellowship on “Biodegradable thin film devices and circuits” - Università Ca' Foscari Venezia**

(Italian law 30 December 2010, n.240, art. 22)

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 “Biodegradable thin film devices and circuits”, SSD : ING/INF 01, project PRIN 2022 titled “Biodegradable thin film electronics for massively deployable and sustainable Internet of Things applications”, CUP H53D23000490001, principal investigator: dott. Giovanni Antonio Salvatore.

The research may be carried out in english.

**Abstract:**

Sustainable electronics is an emerging concept that accounts for the environmental, social, and economic impact of electronic devices through the entire life cycle, with the goal of reducing the electronic waste, and the natural resources and CO2 footprint caused by the intensive processes of Integrated Circuits industry. Biodegradable thin-film transistor (TFT) technology has emerged as a viable alternative – especially for IoT applications - to the resource-intensive manufacturing by simplifying the processes, reducing uncontrolled increase of e-waste, and thus ensuring efficient recycling. Among the TFT technologies, the one based on amorphous oxide semiconductor (a-IGZO), which is at the backbone of active matrix displays, has been recently proposed by IMEC and TNO, ARM, PragmatIC, and academic research groups for the realization of sustainable Radiofrequency (RF) circuits, e.g., RF identification tags. Its simplified manufacturing process requires a 100x lower energy and water consumption and results in a 1000x lower CO2 equivalent footprint (per area) with respect to silicon CMOS technology. Moreover, today TFTs operate above hundreds of MHz with long-term operational stability, prospecting the realization of very large-scale integrated circuits. The candidate will exploit thin film technology and biomaterials to realize fully biodegradable Thin Film Transistors and basic digital/analog circuits for the next generation of Internet of Things and implantable biomedical devices. The work will take place at the Department of Molecular Sciences and Nanosystems of the Ca' Foscari University of Venice and foresees frequent missions to the CNR-IOM of Trieste, which is equipped with state-of-the-art facilities for micro and nanofabrication.

Activities will include but not will be limited to the following:

- Materials characterization via a variety of microscopy and spectroscopy techniques.
- Nanofabrication of devices through lithography techniques, contact and vacuum deposition and etching.
- Electronic transport measurement performed on the final devices.

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.

**Who can apply**

Prospective candidates are expected to hold a master's degree **in the field of physical and engineering 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;
- d. scientific publications and patents relating to the research topic and participation in international conferences as main contact.

**Duration of contract: 20 months** (approximately starting: **January 2024**).

**Stipend:** The research fellowship amounts to 22.824,15 Euros per year (Euro 38.040,25 in 20 months), including taxes and social charges.

**Deadline for submission of applications 27<sup>th</sup> September 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 the notice webpage ([link](#))

Or submit here:

**<https://apps.unive.it/domandeconcorso-en/accesso/dsmn-arprin22-salvatore>**

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 27/09/2023, 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.

### 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, carried-out in english, **will be on 10/10/2023**.The interview will be held in remote, at the link:

**[meet.google.com/xtn-kfft-rjo](https://meet.google.com/xtn-kfft-rjo)**

The short-list of the candidates admitted to the interview, or any postponement, will be published on the University's webpage on 05/10/2023 ([link](#)).

### Topics of the interview:

- assessment of knowledge of electronics, micromanufacturing and measurements of electronic devices;
- verification of knowledge of the foreign language English, ascertained through the interview itself, being taken in English.

### 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.



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Il Direttore del Dipartimento  
di Scienze Molecolari e Nanosistemi  
Prof. Maurizio Selva

VISTO La responsabile del procedimento  
La Segretaria del Dipartimento di Scienze Molecolari e Nanosistemi  
Sonia Barizza: [barizza@unive.it](mailto:barizza@unive.it) Telefono: 041-2348535