

Technische Universität Dresden (TUD), as a University of Excellence, is one of the leading and most dynamic research institutions in the country. Founded in 1828, today it is a globally oriented, regionally anchored top university as it focuses on the grand challenges of the 21st century. It develops innovative solutions for the world's most pressing issues. In research and academic programs, the university unites the natural and engineering sciences with the humanities, social sciences and medicine. This wide range of disciplines is a special feature, facilitating interdisciplinarity and transfer of science to society. As a modern employer, it offers attractive working conditions to all employees in teaching, research, technology and administration. The goal is to promote and develop their individual abilities while empowering everyone to reach their full potential. TUD embodies a university culture that is characterized by cosmopolitanism, mutual appreciation, thriving innovation and active participation. For TUD diversity is an essential feature and a quality criterion of an excellent university. Accordingly, we welcome all applicants who would like to commit themselves, their achievements and productivity to the success of the whole institution.

The **Junior Research Group Single Molecule Machines** at **cfaed** offers, subject to resources being available, a position as

Research Associate / PhD Student (m/f/x)

(subject to personal qualifications, employees are remunerated according to salary group E 13 TV-L)

starting at the **earliest possible date**, limited for 3 years, with the option for extension. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz-WissZeitVG). The position offers the chance to obtain further academic qualification (e.g. PhD).

Position: Research Associate / PhD Student
Investigator: Dr. Francesca Moresco
Terms: 75 % of the full-time weekly hours
Topic: **Molecular manipulation and on-surface synthesis investigations by scanning probe microscopy at low temperature**

Description of the PhD task

The successful candidate will use scanning tunneling microscopy (STM) and non-contact atomic force microscopy (AFM) at low and variable temperatures to experimentally investigate the mechanical and electronic properties of single molecules on a supporting surface.

In the frame of the European Pathfinder Open project ESiM (<https://esim-project.eu>) the successful candidate will investigate intramolecular properties like rotations or conformational changes for future applications in energy storage. On-surface synthesis will be used to obtain new molecular species or to form larger nanostructures by local chemical reactions.

General Requirements

- Excellent university degree in physics, chemistry, materials science, or closely related areas.
- Excellent communication and writing skills in English, especially with respect to the communication with the European cooperation partners.
- Ability to work in an interdisciplinary team composed of theory and simulation, molecular design and synthesis, scanning probe microscopy and manipulation, solid-state physics and nanotechnology.
- Experience in scanning probe microscopy, experimental surface science, or ultra-high vacuum (UHV) is desirable.

What we offer

You will join an enthusiastic and ambitious research group, where your work will be inspired by the interactions with scientists in an international and multidisciplinary research landscape. Your PhD research will be fostered by the cfaed philosophy to promote young researchers, which includes:

- access to state of the art research of leading academic institutes
- International doctoral program
- promotion of gender equality and family-friendly work environment.

About SMM

The Junior Research Group Single Molecule Machines (SMM) (Dr. Francesca Moresco) is an independent research group at TU Dresden, embedded in the Center for Advancing Electronics Dresden (cfaed).

Our research has a strong focus on the physical properties of organic molecules investigated by scanning probe microscopy. We use molecular manipulation and on-surface synthesis to study model systems for electronics and energy storage at the nanoscale.

The SMM Junior Research Group coordinates the EU project ESiM with the participation of 6 European research groups, investigating organic molecules for energy storage and release (see <https://esim-project.eu>)

For more information, please see www.cfaed.tu-dresden.de/francesca-moresco-group/home

For informal enquiries, please contact Dr. Francesca Moresco (francesca.moresco@tu-dresden.de)

TUD strives to employ more women in academia and research. We therefore expressly encourage women to apply. The University is a certified family-friendly university and offers a Dual Career Service. We welcome applications from candidates with disabilities. If multiple candidates prove to be equally qualified, those with disabilities or with equivalent status pursuant to the German Social Code IX (SGB IX) will receive priority for employment.

Your application (in English) must include: a motivation letter, your CV with publication list, copy of degree certificate, transcript of grades (i.e. the official list of coursework including your grades) and two reference letters. Complete applications should be submitted preferably via the TU Dresden SecureMail Portal <https://securemail.tu-dresden.de> as a single pdf document quoting the reference number **2023-ESiM** in the subject header to recruiting.cfaed@tu-dresden.de or by mail to **TU Dresden, cfaed, z. Hdn. Fr. Dr. Francesca Moresco, Helmholtzstr. 10, 01069 Dresden**. The closing date for applications is **January 13, 2023** (stamped arrival date of the university central mail service applies). Please submit copies only, as your application will not be returned to you. Expenses incurred in attending interviews cannot be reimbursed.

About cfaed and TU Dresden

The Center for Advancing Electronics Dresden cfaed is a central scientific unit of TU Dresden, and brings together 300 researchers from the university and 10 other research institutes in the areas of Electrical and Computer Engineering, Computer Science, Materials Science, Physics, Chemistry, Biology, and Mathematics. cfaed addresses the advancement of electronic information processing systems through exploring new technologies which overcome the limits of today's predominant CMOS technology. For more information please see www.cfaed.tu-dresden.de. TU Dresden is among the top universities in Germany and Europe and one of the eleven German universities that were identified as an 'elite university' in June 2012 and confirmed in 2019. As a modern full-status university with 18 faculties it offers a wide academic range.

