

The **Research Training Group (RTG) 2767** „Supracolloidal Structures: From Materials to Optical and Electronic Devices“ of TU Dresden, funded by Deutsche Forschungsgemeinschaft (DFG), offers 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 **as soon as possible**, initially limited for 3 years, with the option of extension. The period of employment is governed by the Fixed Term Research Contracts Act (Wissenschaftszeitvertragsgesetz-WissZeitVG). The position aims at obtaining further academic qualification (e.g. PhD).

Position: **RTG2767-A6**

Investigators: [Dr. Bernd Rellinghaus](#) / [Prof. Dr. Andreas Fery](#)

Terms: 75 % of the full-time weekly hours

Tasks: **In situ and in operando characterization of functional self-assembled nanostructures**

Requirements: excellent university degree (Master of Science or diploma) in physics, materials science, or chemistry; Experience in experimental transmission electron microscopy. Additional experiences in the processing of nanostructured or nanoparticulate materials are appreciated.

Description of the PhD task

The project aims at understanding and controlling self-assembly processes during both the growth and assembly of nanoscopic functional elements by using in-situ transmission electron microscopy (TEM). Here, the DNA-mediated assembly of nanomaterials and novel nano-actuators based on Au nanorods attached to DNA origamis shall be directly observed by liquid phase electron microscopy in order to identify and optimize kinetic parameters that govern the assembly processes. Also, the electrically biased switching of nano-actuators is planned to be monitored operando in the microscope. Since collateral beam damage is unavoidable in in-situ TEM, low dose strategies need to be developed and ex-situ control experiments using analytical high-resolution TEM are to be conducted to quantify and minimize such beam-induced artefacts.

About the RTG

The [RTG 2767](#) aims to train a new generation of experts who will design materials made of supracolloidal structures from the drawing board to application in components. Nanoparticles are used in many optical and electronic components nowadays. Supracolloidal structures are complex superstructures composed of different nanoparticles, similar to how atoms are linked to molecules. This results in innovative, exceptionally promising optical and electronic properties that go far beyond those of the individual building blocks. To date, these structure-property relationships of the assembled particles are not adequately understood. The technological visions of these new materials include novel solar cells, field amplification for highly sensitive spectroscopy, biosensing applications where complex detection processes are made simpler, and even on-site sample examination using smartphones. In order to realize the technical complexity in the training, numerous institutions are connected within the RTG's 2767 tight network, including various groups at the TU Dresden, the Universität Leipzig, the TU Dresden Research Cluster [cfaed](#) and the [Dresden Center for Nanoanalysis](#)

as well as the [Leibniz-Institut für Polymerforschung Dresden e. V.](#), the [Helmholtz-Zentrum Dresden - Rossendorf e. V.](#) and the [Kurt-Schwabe-Institut für Mess- und Sensortechnik Meinsberg e.V.](#)

Requirements

- above-average university degree achieved in short study period,
- willingness and ability to think beyond the boundaries of your field, to act in an international and diverse environment and to live an open and constructive communication,
- strong analytic and problem-solving skills, creativity,
 - an independent, target- and solution-driven work attitude,
 - fluency in English, knowledge of German would be a plus.

What we offer

You will join an enthusiastic and ambitious research training group, where you can drive your project forward and benefit from inspirational interactions with like-minded researchers. The RTG offers structured training program with technical and soft skill courses, research stays abroad as well as contact to industry. It offers the opportunity for PhD thesis completion. The working language of our international teams is English.

For informal enquiries, please contact Dr. Bernd Rellinghaus (bernd.rellinghaus@tu-dresden.de, +49-351-463-32189) or Kristin Schmidt (kristin.schmidt@tu-dresden.de, +49 351 463-43703).

Applications from women are particularly welcome. The same applies to people with disabilities.

Your application (**in English only**) must include: a motivation letter, your CV with publication list, copy of degree certificate, and transcript of grades (i.e. the official list of coursework including your grades). Please include also a link to your Master's or diploma thesis. Complete applications should be submitted preferably via the TU Dresden SecureMail Portal <https://securemail.tu-dresden.de> by sending it as a single pdf document quoting the reference number **RTG2767-A6** in the subject header to recruiting.cfaed@tu-dresden.de or by mail to: **TU Dresden, cfaed, z. Hd. Frau Kristin Schmidt, Helmholtzstr. 10, 01069 Dresden, Germany**. The closing date for applications is **June 8, 2022** (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.

Reference to data protection: Your data protection rights, the purpose for which your data will be processed, as well as further information about data protection is available to you on the website: <https://tu-dresden.de/karriere/datenschutzhinweis>.