The Cluster of Excellence ‘Center for Advancing Electronics Dresden’ (cfaed) offers a fixed-term position as

Research Associate / PhD student

(Subject to personal qualification employees are remunerated according to salary group E 13 TV-L)

Research area: Nonvolatile organic memory devices for neuromorphic applications

cfaed Investigators: Prof. Stefan Mannsfeld

Terms: 65% of the fulltime weekly hours, starting at the earliest possible date, the position is 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 offers the chance to obtain further academic qualification (e.g. PhD).

Position and Requirements

Due to the way conventional CMOS-based architectures operate, they are ultimately limited by the Neumann bottleneck which makes them slow and energy-inefficient at certain tasks (vectorizable, highly parallel information processing). On the other hand, the human brain is an example for an architecture capable of massively parallel processing of information through each synaptic event only consumes about 1–100 fJ. Recent developments have shown that organic devices can be very competitive in this new field. With this PhD thesis, we want to research explore novel device architectures that mimic the important elements of neuromorphic architectures, with specific emphasis on nonvolatile, multi-bit memory devices that can be read and written both electrically and optically.

The successful candidate will:

• fabricate organic multilayer devices by thermal evaporation of materials in vacuum
• explore different fabrication conditions and parameters in order to optimize the device layout for electrical functionality, data retention, storage density etc.
• characterize the resulting devices both morphologically and electrically, the latter including I-V, C-V, C-f, and optical measurements.

We aim at attracting the best talent in the respective research fields and look for:

• an outstanding university degree (master/diploma or equivalent) in chemistry, physics, electronics, materials science or related field of physical sciences,
• strong knowledge in device physics/semiconductor physics,
• previous experience in fabrication of organic or inorganic thin film electronic devices
• ideally also prior experience with thin film deposition from vacuum
• an independent, target- and solution-driven work attitude,
• inter- and multidisciplinary thinking,
• strong motivation and interest to join one of the most ambitious interdisciplinary research clusters,
• very good interpersonal and communication skills; in particular, the ability to effectively work in collaborative research efforts,
• fluency in English - written and oral.
What we offer
You will join a team of enthusiastic scientists who pursue creatively their individual research agenda inspired by the cluster’s innovative approach and support. 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.

Informal enquiries can be submitted to Prof. Mannsfeld, Tel +49 (351) 463 43706; Email: stefan.mannsfeld@tu-dresden.de

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

Application Procedure
Your application (in English only) should include: motivation letter, CV, copy of degree certificate, transcript of grades (i.e. the official list of coursework including your grades) and proof of English language skills. Complete applications should be submitted preferably via the TU Dresden Secure-Mail Portal https://securemail.tu-dresden.de by sending it as a single pdf document quoting the reference number PhD1908_Memory in the subject header to recruiting.cfaed@tu-dresden.de or alternatively by mail to: TU Dresden, cfaed, Frau Anne Schulze, Helmholtzstr. 10, 01069 Dresden, Germany. The closing date for applications is 01.10.2019 (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

About cfaed

cfaed is a cluster of excellence within the German Excellence Initiative. As a central scientific unit of TU Dresden, it 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

cfaed has initiated to create five new Professorships at TU Dresden to further strengthen cfaed's research areas. These strategic positions are being filled with distinguished scientists to enhance the Cluster's research output and increase its international reputation. The Chair of Organic Devices is one of these new positions and will contribute to the Organic/Polymer Path.

About TU Dresden

The 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. As a modern full-status university with 14 departments it offers a wide academic range making it one of a very few in Germany.