The “Nanotechnology Group” at the Institute of Micro- and Nanotechnology at the TECHNISCHE UNIVERSITÄT ILMENAU, Germany offers

1 Doctoral Thesis Research Position (PhD Position) (f/m/d)

on

“Localized Gas Phase Deposition Technologies to Enable the Directed Growth of Micro- and Nanostructures”

Description: The successful candidate will be responsible for research in the fields of localized gas phase electrodeposition, nanoparticle deposition, nanoelectronics, metallurgy, and reactive materials. Different from conventional deposition technologies a new approach (google “gas phase electrodeposition” to find current publications by the group) referred to as a localized gas phase electrodeposition process will be used to deposit micro- and nanostructures. The research will study advanced methods to guide nanoparticles or vapor in an aligned manner to experimental spots of interest. The physical principle is based on novel aerosol deposition techniques which need to be developed further. The project involves combinatorial exploratory research at the interplay between nanoparticle generation, nanoparticle transport and nanoparticle deposition.

The research includes:

- Planning, implementation and evaluation of experimental work
- The design and implementation of the necessary lithographic patterning processes to fabricate substrates and interconnects.
- The design and implementation of the necessary deposition processes to collect particles to nanostructures on the desired substrates.
- The evaluation of the material properties.
- The demonstration of novel applications and fabrication processes.

Setting requirements are a scientific university degree (Diploma / Masters) in materials science, mechanical engineering, electrical engineering or comparable. Experience in at least one of the following areas is desirable: semiconductor processing technology, lithography, microsystems fabrication, advanced printed circuit boards, assembly of chips on various substrates, directed self-assembly, material transfer, and 3D modelling/simulation. The applicant is expected to exhibit a high degree of experimental skill, experience in design of prototypes and mechanical constructions. Applicants should point out those qualifications in the application.

Selection Process: As an applicant it is important that you show that you are (i) qualified to work in this area and that you have (ii) own ideas or are (iii) capable to develop own research questions/ideas to advance the current knowledge in this field of research.

To do this your application letter needs to provide a brief description and answers to the following 5 questions:

1. What is the research about (look at the literature and keywords in the first paragraph)?
2. Are there others beyond us working on this internationally that you can find or know?
3. What technological approaches and methods are used?
4. Do you have any background or experience in these fields or why would you think you would be qualified to enter this research area and succeed and engaged in an independent doctoral thesis research?
5. Describe at least one idea of your own of what you would research that goes beyond the current state of the art and that would advance the knowledge in this research area?

Letters of application without answers to these 5 questions will not be considered.

If you have any questions, please contact Prof. Heiko O. Jacobs, +49 3677 69 3723, heiko.jacobs@tu-ilmenau.de

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