

IEEE International Symposium on Assembly and Manufacturing (ISAM 2011) Tampere, Finland, May 25-27, 2011

Proposal for the Organized Session “Robot-based Automation of Nanohandling”

Organizers:

Prof. Dr.-Ing. habil. Sergej Fatikow
PhD cand. Daniel Jasper

Division Microrobotics and Control Engineering
Department of Computing Science,
University of Oldenburg, Germany

Technology Cluster Automated Nanohandling
OFFIS - Institute for Information Technology
Oldenburg, Germany

E-mail: fatikow@uni-oldenburg.de
d.jasper@uni-oldenburg.de

Phone: +49 441 798-4291 / -4296

URL: www.amir.uni-oldenburg.de

Scope:

Robot-based nanohandling stations (RoNS) are designed to manipulate and assemble objects with sizes in the micrometer and nanometer range. Challenges for these stations are the required accuracies of up to a few nanometers, the different and unknown physical behavior of micro- and nano-sized objects, and the lack of reliable and fast sensory feedback. Recently, a strong trend towards the automation of nanoassembly processes has emerged, which is a crucial issue e.g. for MEMS and NEMS fabrication, semiconductor technology, nano-material research, medicine or biotechnology. Advanced control methods based on real-time sensor feedback from the nanoscale are of great importance for the development of automated RoNS. This Organized Session will review and discuss latest major advances in these R&D fields.

Specific topics include, but are not limited to:

- Robots and systems for micro/nanohandling
- RoNS inside SEM
- AFM-based nanohandling
- Sensor feedback for automation on the nanoscale
- Real-time image processing in RoNS
- Robot control for automation on the nanoscale
- Process planning and scheduling for robot-based nanohandling
- Micro-to-nano-scale bridging
- Applications of RoNS