

FAX RESPONSE

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! Please respond until 27.11.2009 !

- ☐ I will attend the workshop.
- ☐ I cannot attend the workshop,
but I am interested in He-ion microscopy
with respect to
- ☐ General Information
- ☐ Imaging
- ☐ Patterning / Lithography
- ☐ Analysis
- ☐ Others (please specify)
.....
- ☐ I will participate in the visit of the
Ion Beam Centre, starting at 10.30 h.

Name

Affiliation

Address

Phone

Fax

Email

Date

Signature

(Please complete one registration form
per participant.)

WORKSHOP INFORMATION

LANGUAGES

The workshop languages will be German and English.
Presentation slides should be in English.

FEE / COSTS

The workshop is **free of charge**.
Travelling costs have to be covered by the participants.
Buffet and refreshments will be provided by FZD.

WORKSHOP LOCATION

Forschungszentrum Dresden-Rossendorf e.V.



The workshop takes place at Bldg. #14, Room 202,
which is close to the main entrance building.
cf. <http://www.fzd.de/db/Cms?pNid=281>

ORGANIZED BY

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A Carl Zeiss SMT AG Company

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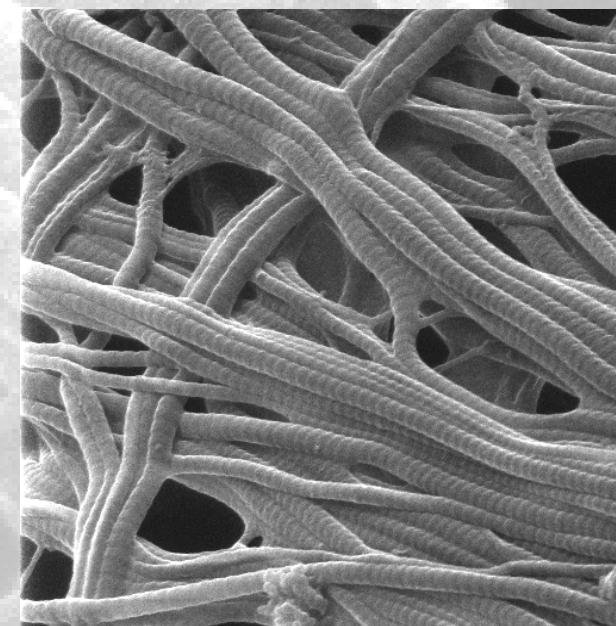
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A Novel Beam for New Challenges
of the Nanoworld

WORKSHOP Helium Ion Microscopy and its Applications

9.12.2009

Forschungszentrum
Dresden-Rossendorf



ZEISS	CARL ZEISS SMT	Field Of View 1.90 um Mag (4x5 Polaroid) 66,842.11 X	200.00 nm Blanker Current 0.6 pA	Dwell Time 20.0 us Line Averaging 8	Date: 8/20/2008 Time: 7:20 PM Acceleration V 31994.6 V
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CARL ZEISS SMT



**Forschungszentrum
Dresden Rossendorf**

<http://www.fzd.de/FWI/HeMi>

SCOPE

The rapidly increasing use of advanced materials like carbon, ceramics as well as bio- and soft materials in nanotechnology causes a number of challenges for material characterization and -analysis.

Helium Ion Microscopy is showing a strong ability to address such challenges due to its high resolution **imaging down to 2.5 Å** combined with unique surface sensitivity. It also prevents surface damage of soft materials and allows a very efficient charge control. Life science research increasingly calls for nanometer resolution imaging on highly insulating samples of low weight materials, which can be addressed via the charge control capabilities of the tool. The extreme surface sensitivity provides the opportunity for high spatial resolution **surface analysis and metrology** with backscattered ion spectroscopy having monolayer sensitivity. Thin film and small particle analyses are two applications.

By controlling the beam parameters it is possible to use the device for controlled and very gentle **nano-machining** especially for soft materials like graphene or biomaterials. Patterning with length scales of just a few nanometers and very high aspect ratios could be demonstrated. The lack of proximity effects makes the technology also interesting for applications in the area of photonic crystals.

Over the last year CARL ZEISS SMT has seen a rapid ramp of the installed base to now eleven systems outside the factory worldwide. The developers are working closely with most of these customers in specific application areas of the technology.

During this workshop, scientists from both CARL ZEISS SMT and users / customers from research institutes will give insights into the current state of the art of technology and provide examples for exciting application areas addressed so far.

PROGRAM

10.30 h Visit of the Ion Beam Centre

11.15 – 12.00 h Welcome and Buffett

WORKSHOP

12.00 – 12.20 h
Prof. Wolfhard Möller
Forschungszentrum Dresden-Rossendorf e.V.

Welcome Address

Ion Beam Physics and Materials Research at FZD

INTRODUCTION

12.20 – 12.40 h
Dr. Rainer Knippelmeyer
CARL ZEISS SMT Inc. Peabody, USA
**ORION He-Ion Microscope –
A New Tool for High-Resolution Material Analysis**

12.40 – 13.10 h
Dr. Larry Scipioni
CARL ZEISS SMT Inc. Peabody, USA
**Overview of the Unique Application Space of
He-Ion Microscopy**

IMAGING

Preparation for the Remote Demo

13.20 – 13.50 h
Dr. Fabian Perez-Willard
CARL ZEISS SMT – NTS, Oberkochen
He-Ion Microscope: Web-Based Demonstration

13.50 – 14.10 h
Prof. Oleg Vyvenko
St. Petersburg State University, Russian Federation
**He-Ion Microscope: Secondary Electron Energy Distribution
and Application Examples**

14.10 – 14.30 h
Dr. Ute Hörmann
Universität Ulm
**He-Ion Microscopy and Advanced TEM on High
Performance Gas-Ionized Raney-type Nickel Catalysts**

PROGRAM (continued)

14.30 – 14.50 h
Dr. Lijuan Wang
*Leibniz-Institut für Festkörper- und Werkstoffforschung
Dresden*

**He-Ion Microscope: A New Approach for Investigation
of Semiconductor Nanostructures**

- COFFEE BREAK - (until 15.20 h)

15.20 – 15.40 h
Dr. Claus Burkhardt
Universität Tübingen
**Investigations of Biological Samples with He-Ion
Microscopy**

15.40 – 16.00 h
Frank Altmann, Michel Simon
Fraunhofer Institut für Werkstoffmechanik, Halle
**Evaluation of He-Ion Microscopy for Characterization
of Microelectronic and Polymer Electronic Devices**

ANALYTICS

16.00 – 16.20 h
Dr. Larry Scipioni
CARL ZEISS SMT Inc. Peabody, USA
ORION Spectra: Backscattered Helium Analysis

16.20 – 16.50 h
Prof. Robert A. Schwarzer
Herrenberg, Germany; formerly: TU Clausthal-Zellerfeld
Ion Blocking Patterns and Orientation Microscopy

LITHOGRAPHY

16.50 – 17.20 h
Dr. Diederik Maas
TNO Science and Industry Delft, The Netherlands
**Nano-Fabrication with the He-Ion Microscope at the TNO
NanoLab**

- OPEN DISCUSSION / OUTLOOK -

The workshop will be closed at around 18.00 h.