International Workshop on

THz dynamics in carbon based nanostructures

March 5 - 7, 2012

Helmholtz-Zentrum Dresden-Rossendorf

funded by the German Science Foundation (DFG) to initiate and intensify bilateral cooperation between Japan and Germany.

Organizers: Manfred Helm and Stephan Winnerl (HZDR), Tobias Hertel (Univ. Würzburg), Rupert Huber (Univ. Regensburg), Masayoshi Tonouchi (Univ. Osaka)

Monday, March 5, 2012

8:15 Pickup by coach from Hotel Park Inn: Coach leaves at 8:15

9:00 Manfred Helm (HZDR, Dresden, Germany):
Welcome (Introduction to HZDR and remarks on the workshop)

Session 1: Introductory talks

9:15 Masayoshi Tonouchi (Osaka University, Japan):
Prospects of THz physics and technology

10:00 Junichiro Kono (Rice Univ. Houston, USA):
Basic properties of carbon nanostructures

10:45 Coffee break

Session 2: Nonlinear THz response of carbon nanostructures

11:15 Koichiro Tanaka (Kyoto University, Japan):
Nonlinear THz spectroscopy in graphene with high-power single-cycle THz pulses

11:55 Caihong Zhang (Osaka University, Japan):
Investigation on THz field induced nonlinear effects

12:15 Lunch break

Session 3: Nonlinear THz response (continued) and carbon-based devices

14:00 Sergey Mikhailov (University of Augsburg, Germany):
THz properties of graphene

14:40 Friederike Junginger (University of Konstanz, Germany):
Extreme THz nonlinearities: from four-wave-mixing in InSb to pump-probe experiments in graphite

15:00 Dmitry Turchinovich (MPI for Polymer Research, Mainz, Germany and DTU Denmark):
THz self-phase modulation in semiconductors

15:20 Taiichi Otsuji (Tohoku University, Japan):
Toward the creation of THz graphene injection lasers

16:00 Claudia Rocha (University of Jyväskylä, Finland and TU Dresden, Germany):
Controlling ac transport in carbon-based Fabry-Perot devices

16:20 Nobuyuki Aoki (Chiba University, Japan):
Analysis of operation mechanisms in SWNT network FETs via scanning gate microscopy

16:40 Poster session (Coffee served during session)

18:30 Bus pickup for dinner at Restaurant Fischhaus

Tuesday, March 6, 2012

8:15 Pickup by coach from Hotel Park Inn

Session 4: Growth, control and functionalization of carbon nanostructures

9:00 Maki Suemitsu (Tohoku University, Japan):
Epitaxial graphene formation on Si substrate through 3C-SiC/Si heteroepitaxy

9:40 Hirokazu Fukidome (Tohoku University, Japan):
Nanoscale control of epitaxial graphene with tuned substrates

10:00 Mark H. Rümmeli (IFW Dresden, Germany):
Functionalization of carbon nanotubes

10:40 Coffee Break

Session 5: Optical investigations of carbon nanotubes

11:10 Alexander Högele (LMU Munich, Germany):
Quantum optics in single carbon nanotubes

11:50 Achim Hartschuh (LMU Munich, Germany):
Near-field microscopy of carbon nanotubes

12:30 Lunch Break

14:00 Bus pickup for excursion to Bastei and Pillnitz

Wednesday, March 7, 2012

8:15 Pickup by coach from Hotel Park Inn

Session 6: THz transport, spectroscopy and imaging

9:00 Peter Olbrich (University of Regensburg, Germany):
Chiral edge currents and circular ac Hall effect in graphene

9:40 Tobias Kampfrath (Fritz-Haber-Institute Berlin, Germany):
THz conductivity and dynamics in carbon nanotubes

10:20 Kazunori Serita (Osaka University, Japan):
Scanning laser THz imaging system

10:40 Coffee break

Session 7: Ultrafast processes

11:10 Daniel Schilling (University of Würzburg, Germany):
NIR spectral hole burning spectroscopy of single-wall carbon nanotubes

11:30 Ermin Malic (TU Berlin, Germany):
Theory of relaxation processes in graphene and CNTs

12:10 Martin Mittendorff (HZDR Dresden, Germany):
Relaxation dynamics in Landau-quantized graphene

12:30 Closing remarks

12:45 Lunch (Cafeteria of HZDR)

13:30 Pickup by guides for lab tour

<u>Lab tours:</u>
3 or 4 groups of ~10 people each
ELBE: Accelerator & FEL, optical labs and briefly other labs at ELBE;
High-Magnetic Field Laboratory (HLD)

14:30 Bus back to hotel

Posters

1. Ryuhei Kinjo (Osaka University, Japan):
   Observation of permittivity of strained $SrTiO_3$ on $MgAl_2O_4$ by THz time domain spectroscopy

2. Ryosuke Kaneko (Osaka University, Japan):
   Infrared and THz study of graphene, boron nitride and boron carbonitride

3. Khandoker Abu Salek (Osaka University, Japan):
   Terahertz radiation from solar cells observed by a laser terahertzemission microscope

4. Yuki Maekawa (Osaka University, Japan):
   Observation carrier dynamics in SI-GaAs with pump-probe laser THz emission microscope

5. Yuki Sano (Osaka University, Japan):
   Terahertz spectroscopy of graphene thin films

6. Takayuki Watanabe (Tohoku University, Japan):
   Ultrafast carrier dynamics and amplified stimulated THz emission in optically pumped graphene at room temperature

7. Eiji Saito (Tohoku University, Japan):
   3C-SiC heteroepitaxial growth on Si substrate for high quality epitaxial formation of graphene

8. Myung-Ho Jung (Tohoku University, Japan):
   High performance graphene field-effect transistors with extremely small access length using self-aligned technique

9. Tatsuya Doi (Chiba University, Japan):
   Investigation of electronic states of fullerene nano-whisker using electron spin resonance

10. Torben Winzer (TU Berlin, Germany):
    Microscopic theory of ultrafast many-particle kinetics in graphene

11. Tobias Plötzing (RWTH Aachen, Germany):
    Ultrafast relaxation in graphene

12. Martin Scheuch (FHI Berlin, Germany):
    Ultrafast relaxation in graphite

13. Stephan Winnerl/Ermin Malic (HZDR Dresden & TU Berlin, Germany):
    Ultrafast relaxation dynamics close to the Dirac point in graphene

14. Ibrahim Imad (IFW Dresden, Germany):
    to be announced

15. Christoph Drexler (Univ. Regensburg, Germany):
    Photon helicity driven currents in graphene

16. Michael Gensch (HZDR Dresden, Germany):
    The coherent THz facility at ELBE