

Nano-Fingerabdruck eines zweidimensionalen Kristalls:
Wissenschaftler der TU Graz veröffentlichen Forschungsergebnisse in „Nature“
<http://www.presse.tugraz.at/pressemitteilungen/2008/16.10.2008.htm>

Forscher von der Karl-Franzens-Universität und TU Graz entwickelten erstmals nano-optische Lichtquelle
<http://www.presse.tugraz.at/pressemitteilungen/2008/29.09.2008.htm>

„Doping“ erwünscht:
Wissenschaftler der TU Graz entwickeln organische Halbleiter weiter
Fundamentale Erkenntnisse im Jubiläumsheft von „Advanced Materials“ publiziert
<http://www.presse.tugraz.at/pressemitteilungen/2008/01.09.2008.htm>

Die Kraft der Sonne nutzen:
Christian Doppler Pilotlabor für Nanokomposit Solarzellen eröffnet an der TU Graz
<http://www.presse.tugraz.at/pressemitteilungen/2008/21.07.2008.htm>

Leuchtende Kunststoffe in Diskussion:
Internationales Expertentreffen an der TU Graz
<http://www.presse.tugraz.at/pressemitteilungen/2008/17.07.2008.htm>

Biegsame Bildschirme als Vision:
Physiker von Montanuniversität Leoben und TU Graz veröffentlichen Forschungsergebnisse im Wissenschaftsjournal „Science“
<http://www.presse.tugraz.at/pressemitteilungen/2008/04.07.2008.htm>

Fußball-Moleküle im Fokus:
Chemie-Nobelpreisträger Robert F. Curl zu Gast an der TU Graz
<http://www.presse.tugraz.at/pressemitteilungen/2008/24.6.2008.htm>



Wolfgang Ernst, Nobelpreisträger Robert F. Curl, Rektor Sünkel (v.l.n.r.)

Auszeichnung für bestmögliche Studienleistung:
Physiker Markus Allesch promoviert „sub auspiciis“
<http://www.presse.tugraz.at/pressemitteilungen/2008/29.4.2008.htm>

Doktoratsausbildung für „die Besten der Besten“:
Auftakt für zwei FWF-Exzellenzprogramme an der TU Graz
<http://www.presse.tugraz.at/pressemitteilungen/2008/28.4.2008.htm>

Facts and Figures 2008

Technical Physics

Physics is the most highly cited
Of the top 100 most highly cited papers of the TU Graz listed in Thompson ISI, 29 are from Physics.

Institute for Electron Microscopy
Institute of Experimental Physics
Institute of Materials Physics
Institute of Solid State Physics
Institute of Theoretical Physics and Computational Physics

NanoTec Centre Weiz
Graz Centre for Electron Microscopy

Christian Doppler Laboratories:
Advanced Functional Materials
Fundamentals of Paper Strength
Pilotlaboratory for Nanocomposite Solar Cells

Enrolled students (2007)

Beginners	80
Bachelor	368
Diploma	116
Master	9
Doctoral	74

Degrees Awarded (2007)

Bachelor	7
Diploma	35
Master	-
Doctoral	11

Institute for Electron Microscopy and Fine Structure Research (FELMI)

FELMI has several of Europe's most advanced electron microscopes. It plays a primary role to support interdisciplinary and interfaculty research, training and education through essential resources for electron- and ion beam micro- and nanocharacterisation of all kind of advanced materials.

<http://www.felmi-zfe.tugraz.at/>

Institute of Experimental Physics

Research areas at the Institute of Experimental Physics include studies of free atoms, molecules, and clusters using high resolution laser spectroscopy and ionization methods, and surface scattering as well as nonlinear optics, plasma diagnostics and high temperature materials characterization.

<http://lep.tugraz.at>

Institute of Materials Physics

The Institute of Materials Physics at Graz University of Technology is working on basic and applied materials research with a major focus on nanostructured functional materials, defects in solids, and health issues of radiation physics.

<http://www.imp.tugraz.at/>

Institute of Solid State Physics

The Institute of Solid State Physics focuses on surface science and organic electronic materials and devices. It participates in two Christian Doppler Laboratories: Fundamentals of Paper Strength, and Pilot laboratory for Nanocomposite Solar Cells.

<http://www.if.tugraz.at/>

Institute of Theoretical and Computational Physics

The research activities of the ITPCP focus on many-body systems in solid-state and plasma physics. Research topics range from weak to strong correlation effects, such as band structures, magnetism, spintronics, high-temperature superconductivity, colossal magneto-resistance, plasma confinement, heating in thermonuclear fusion devices, and transport in nano-materials. <http://itp.tugraz.at/>

International Conferences



Fπ8
the 8th International Symposium
on Functional π -Electron Systems
July 21 - 25, 2008 in Graz / Austria



**40th EGAS
GRAZ**

40th EGAS Conference
Technische Universität Graz
Institut für Experimentalphysik
2 - 5 July 2008

WINTERSCHOOL ON ORGANIC ELECTRONICS The Role of Interfaces

Organizers:
Egbert Zojer, Roland Resel - TU Graz
H. Koch - HU Berlin

January 26th - January 31st, 2008
Universitäts-Sportheim Plannersalm
Donnersbach, Austria



1500 k€ Industrial contracts in 2008

The physics institutes have contracts with about 100 companies. Most of these contacts are through NTC Weiz, Zentrum für Elektronenmikroskopie, and the Christian Doppler laboratories.

- Anton Paar / Graz
- AT&S AG / Stmk.
- AVL List GmbH / Stmk.
- BRIMATECH Services GmbH / Wien
- Durst Phototechnik Digital Technology GmbH / Lienz
- HiTec Marketing / Wien
- Infineon / Munich
- Isovolta AG / Stmk.
- Mayr-Melnhof Karton Gesellschaft mbH / Stmk.
- Mondi Packaging / Stmk
- Sappi Austria Produktions-GmbH & Co. KG / Stmk.
- SEZ, Villach



NAWI

Based on a long-standing well-established cooperation, the Physics Institutes of Graz University of Technology and Karl-Franzens University Graz are active members of NAWI Graz.

Graduate and post-graduate teaching:

- Joint Graz Physics Colloquium running for more than 8 years.
- Joint Doctoral School of Physics of TUG and KFUG (started 2008).
- FWF Doktoratskolleg - Numerical Simulations in Technical Sciences
- FWF Doktoratskolleg - Hadrons in Vacuum, Nuclei and Stars
- New NAWI Master's program Nanophysics starting 2009.

Undergraduate teaching:

- In the bachelor's programmes Technical Physics (TUG) and Physics (KFUG) about 30% of the courses are offered on a joint basis (starting 2009).

Research:

Partners from the Physics Institutes of Graz University of Technology and Karl Franzens University Graz are closely cooperating in the following externally funded projects:

- National Research Network (NFN):
Interface Control and Functionalised Organic Films
(participating NAWI Physics groups: M. Ramsey, KFUG; R. Resel, A. Winkler, E. Zojer, TUG)
- National Research Network (NFN):
High-performance bulk nanocrystalline materials
(participating NAWI Physics groups: H. Krenn, KFUG; R. Würschum, TUG)
- Austrian Nano-Initiative (FFG) Integrated Organic Sensor and Optoelectronic Technologies (ISOTEC)
(participating NAWI Physics groups: E. List, R. Resel, TUG; J. Krenn , KFUG)

Prizes 2008



The TU Graz has the highest ranked physics department for teaching in Austria in the 2008 Centre for Higher Education Development (CHE) rankings.



Peter Pacher and Daniel Koller (KFU) shared the 2008 ESG-Nano-Prize awarded by the Erwin Schrödinger Society for Nanoscience.



Evelin Fisslthaler won the 2008 Nano Youth Award of the Austrian Federal Ministry of Transport, Innovation and Technology. The award is given for excellent research in the field of nanoscience and nanotechnology.



Prof. Emil List won the award for the best project development at the 4th Global Plastic Electronics Conference on October 28, 2008 in Berlin. The award cited his work on organic optoelectronics and sensors.



Lorenz Romaner won the Karlheinz Seeger prize of the Austrian Physical Society for best solid state physics thesis in Austria.



Wolfram Steurer was awarded a DOC stipend of the Austrian Academy of Sciences



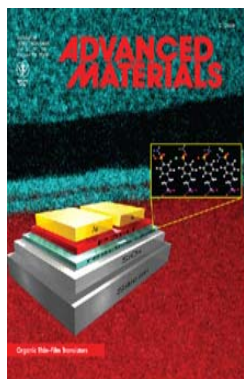
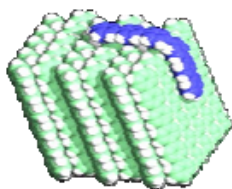
Markus Allesch received his doctorate „sub auspiciis praesidentis“

Markus Allesch also received the Styrian Youth Prize for Simulation and Modeling.

Highlights 2008

In the July 3, 2008 issue of *Science* magazine, a team from the Montan University and the TU Graz described the special thin film growth mechanisms related to the flexibility of long molecules.

G. Hlawacek, P. Puschnig, P. Frank, A. Winkler, C. Ambrosch-Draxl, C. Teichert, 'Characterization of Step-Edge Barriers in Organic Thin-Film Growth,' *Science* 321 p. 108 (2008).



An image of an organic transistor made at the Institute of Solid State Physics, TU Graz appears on the inside cover of the July 7 issue of *Advanced Materials*. The image background shows an elemental map of a cross-section through an organic thin-film transistor containing a chemically reactive interfacial layer, as determined by energy-filtered transmission electron microscopy.

P. Pacher, A. Lex, V. Proschek, H. Etschmaier, E. Tchernychova, M. Sezen, U. Scherf, W. Grogger, G. Trimmel, C. Slugovc, and E. Zojer, Chemical Control of Local Doping in Organic Thin-Film Transistors: From Depletion to Enhancement, *Advanced Materials* 20 pp. 3143–3148 (2008).



Cover page of the International Journal of Materials Research:

In Cr steels, nitrides (MX , M_3X) and modified Z-phase are of special interest because of their different contribution to the creep strength of the material. The changes in the chemical composition of complex nitrides and their crystallography were investigated using transmission electron microscopy and electron energy-loss spectrometry.

International Journal of Materials Science
Vol. 99 Issue 4 Page 422 April 2008

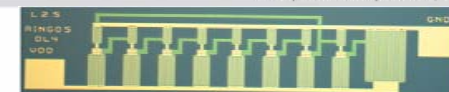
Compositional characterisation and thermodynamic modelling of nitride precipitates in a 9 – 12% Cr steel

M. ALBU, F. MÉNDEZ MARTÍN, G. KOTHLEITNER, B. SONDEREGGER

nature

Vol 455 | 16 October 2008 | doi:10.1038/nature07320

LETTERS



Bottom-up organic integrated circuits

Edger C. P. Smits^{1,2,3}, Simon G. J. Mathijssen^{2,4}, Paul A. van Halbeek^{2,5}, Sepas Setayesh², Thomas C. T. Geuns², Kees A. H. A. Mutsaers², Eugenio Cantatore², Harry J. Wondergem², Oliver Werzer⁶, Roland Resel⁶, Martijn Kemerink⁴, Stephan Kirchmeyer⁷, Aziz M. Muzafarov⁸, Sergei A. Ponomarenko⁹, Bert de Boer¹, Paul W. M. Blom¹ & Dago M. de Leeuw^{1,2}

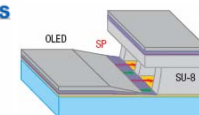
A research team from The Netherlands, Austria, Russia, and Germany announced a breakthrough in the development of organic electronic integrated circuits in the October 16, 2008 issue of the journal *Nature*. Self-Assembled Monolayer Field Effect Transistors (SAMFETs) were used to build circuits including a 15-bit code generator consisting of over 300 transistors.

nature photonics

LETTERS

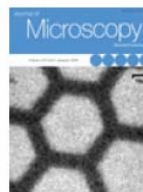
Organic plasmon-emitting diode

D.M. KOLLER^{1,2}, A. HOHENAU^{1,2}, H. DITLBACHER^{1,2}, N. GALLER^{1,2}, F. REIL^{1,2}, F.R. AUSSENEGG^{1,2}, A. LEITNER^{1,2}, E.J.W. LIST^{3,4} AND J.R. KRENN^{1,2*}



Plasmonics is a rapidly developing field that uses plasma waves at an interface to modify light signals. I team from the TU Graz and the University of Graz used an organic light emitting diode to couple light into a surface plasmon structure. This has tremendous potential for the development of optically based chemical sensors.

D.M. Koller, A. Hohenau, H. Ditlbacher, N. Galler, F. Reil, F.R. Aussenegg, A. Leitner, E.J.W. List und J.R. Krenn, *Nature Photonics* (2008)



Cover page of the Journal of Microscopy:

The first 2 D image obtained using neutral helium atoms to image a sample. The imaged sample is a hexagonal copper grating with a period of 36 μm and a rod thickness of 8 μm . The image is obtained in transmission mode by scanning the focussed beam across the sample.

Journal of Microscopy
Vol. 229 Issue 1 Page 1 January 2008

Imaging with neutral atoms—a new matter-wave microscope

M. KOCH, S. REHBEIN, G. SCHMAHL, T. REISINGER, G. BRACCO, W. E. ERNST, B. HOLST