

## Industrial contracts

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              | - Infineon / Munich, Villach       |
| - AT&S AG / Stmk.                | - Isovolt AG / Stmk.               |
| - AVL List GmbH / Stmk.          | - Mayr-Melnhof Karton / Stmk.      |
| - BRIMATECH Services GmbH / Wien | - Mondi Packaging / Stmk           |
| - Durst Phototechnik / Lienz     | - Sappi Austria Produktions/ Stmk. |
| - HiTec Marketing / Wien         | - SEZ, Villach                     |
|                                  | - Lenzing AG, Lenzing              |

## Pressemitteilungen 2009

Grazer Forscher studieren "wachsende" Elektronik

Die Presse

<http://diepresse.com/home/science/501306/index.do?from=suche.intern.portal>

Wissenschafterteam mit Grazer Beteiligung gelingt Durchbruch

Kleine Zeitung

<http://www.kleinezeitung.at/steiermark/graz/graz/2071887/index.do>

Das dünnste Kabel der Welt

Die Presse

<http://diepresse.com/home/science/511081/index.do?from=suche.intern.portal>

NAWI Graz-Wissenschaftler gelingt Durchbruch in der Nano-Optik:

Universitätenübergreifende Forschergruppe entwickelt weltweit neue Messmethode

<http://www.presse.tugraz.at/pressemitteilungen/2009/15.01.2009.htm>

Nano-Tröpfchen nahe dem absoluten Nullpunkt:

Forscher der TU Graz beeinflussen erstmals magnetische Eigenschaften

<http://www.presse.tugraz.at/pressemitteilungen/2009/22.07.2009.htm>

Einzelmoleküle als elektrische Leiter:

Internationalem Forscherteam gelingt entscheidender Fortschritt

<http://www.presse.tugraz.at/pressemitteilungen/2009/08.07.2009.htm>

Einblicke in Nanowelten:

Die TU Graz versammelt führende Forscher in der Elektronenmikroskopie

<http://www.presse.tugraz.at/pressemitteilungen/2009/24.08.2009.htm>

## Facts and Figures 2009

## Technical 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

### Enrolled students (2008/2009)

Bachelor	419	Master	35
Diploma	83	Doctoral	74

### Service Courses for other studies

1300 students from other studies followed courses taught by the physics department in 2008/2009.

## Collaborations



The physics institutes all participate in the Field of Excellence: Advanced Materials Science



- NanoTec Centre Weiz
- Austrian Centre for Electron Microscopy and Nanoanalysis
- EUROTOM ÖAW

- Christian Doppler Laboratories:
- Fundamentals of Paper Strength
  - Nanocomposite Solar Cells



- 30% joint Bachelor courses with KFU
- TUG/KFU joint Nanophysics Master
- Joint GASS Doctoral School
- FWF Doktoratskolleg - Numerical Simulations in Technical Sciences
- FWF Doktoratskolleg - Hadrons in Vacuum, Nuclei and Stars
- Joint Graz Physics Colloquium running for more than 9 years
- Numerous TUG/KFU research projects



## Prizes

The 8th International Symposium on Functional n-Electron Systems (July 21st to 25th) won the Congress Award Graz for the best scientific conference in Graz in 2008.

Organizer: Emil List.

The Austrian ministry of economics (BMWFI) awarded a prototype PRIZE to researchers in the Christian Doppler Laboratory for Paper Strength. €113000 was awarded to build a prototype of an ellipsometry insert for an infrared spectrometer. The insert was designed by Eduard Gilli, Robert Schennach, and Martin Kornschober.

The Institute of Solid State Physics won a €3000 prize for being one of the three most inventive institutes at the TU Graz on Erfindertag, Nov. 6, 2009.

We are pleased that TU Graz physics graduate Norbert Koch was appointed W3-Professur "Struktur, Dynamik und elektronische Eigenschaften molekularer Systeme" at the Humbolt University in Berlin and Liviu Chioncel was appointed associate professor in Augsburg.

Stefan Rossegger was awarded the NIM-A Young Scientist Award for his Presentation "An Analytical Approach to Space Charge Distortions in Time Projection Chambers" at the 11th Pisa Meeting on Advanced Detectors.

Michael Hörzinger won the "Würdigungspreis 2009" of the Bundesministeriums für Wissenschaft und Forschung.

## Conferences

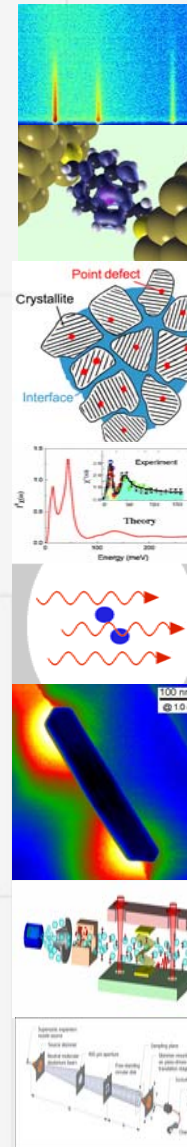


The Nano and Photonics conference was held in Mauterndorf. Organizers: Emil List, Franz Ausseneegg (KFUG), Kurt Hingerl (JKU Linz)

The Microscopy Conference Graz, 30 August - 4 September 2009, had over 1000 participants. Conference chairman: Ferdinand Hofer

Symposium "Concepts in Molecular and Organic Electronics" at the meeting of the Materials Research Society in San Francisco. Co-organizer: E. Zojer

## 135 publications in refereed journals in 2009



The ordering of liquid-crystalline molecules in self-assembled monolayer field-effect transistors (SAMFETs) were studied by x-ray diffraction. S. G. J. Mathijssen, et al., Nature Nanotechnology (2009).

Doping Molecular Wires: The ultimate miniaturization of electronics would be to use single molecules as electronic components. Georg Heimel, Egbert Zojer, Lorenz Romaner, Jean-Luc Bredas, and Francesco Stellacci, Nanoletters (2009).

Positron annihilation was used to study fine-grained materials where point defects and interfaces coexist. B. Oberdorfer and R. Würschum Phys. Rev. B 79, 184103 (2009)

The energy distribution of the "pairing glue" responsible for High- $T_c$  superconductivity was extracted from far-infrared experiments. J. Yang, J. Hwang, E. Schachinger, J. P. Carbotte, R. P. S. M. Lobo, D. Colson, A. Forget, and T. Timusk, Physical Review Letters (2009)

Compound particles consisting of coherent superpositions of light and matter in coupled cavity arrays were identified and their excitation spectra was calculated. P. Pippan, H.G. Evertz, and M. Hohenadler, Physical Review A (2009). M. Knap, E. Arrigoni, and W. von der Linden, Physical Review B (2010)

Energy-filtering TEM enables the imaging of surface plasmons on nanoparticles at nanometer resolution: B. Schaffer, U. Hohenester, A. Trügler, F. Hofer, Physical Review B (2009), Al Keen Loh, G. Kothleitner, D. McComb, ACS Nano (2009).

In cooperation with the Medical University in Graz: Progressive circumscribed sclerosis - a novel side-effect of immunotherapy with aluminium-adsorbed allergen extracts; L. El Shabrawi, P. Pölt, W. Aberer, E. Aberer, Allergy (2009).

Coherent Spin Manipulation and ESR on Superfluid Helium Nanodroplets, Markus Koch, Gerald Auböck, Carlo Callegari, and Wolfgang E. Ernst, Phys. Rev. Lett. 103, 035302 (2009).

Poisson's spot with molecules, Thomas Reisinger, Amil A. Patel, Herbert Reingruber, Katrin Fladischer, Wolfgang E. Ernst, Gianangelo Bracco, Henry I. Smith, and Bodil Holst, Phys. Rev. A 79, 053823 (2009), featured as research highlight in Nature 459 (28 May 2009).