

Education/Training/Gender Equality

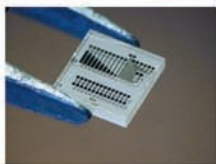


Students at the pulsed laser deposition chamber create epitaxial heterostructures of oxide materials. (AU)

A central part of the transregio consists of the education and promotion of students and young researchers at an early stage of their career. The transregio establishes further training units and a graduate school for Ph.D. students supported by AU, LMU and TUM. Special focus lectures, workshops and summer schools will cover the research of the TRR 80 and attract international students. Equal opportunities for both male and female scientists are promoted.

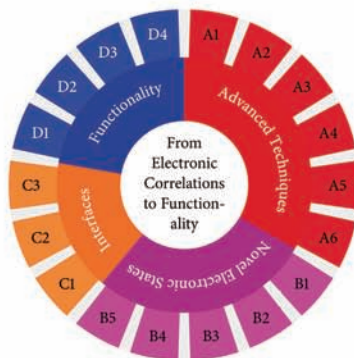


Students in the cleanroom of Experimentalphysik VI at the Universität Augsburg. (AU)



Microstructures fabricated from a highly disordered SrRuO₃ thin film using photolithography. (AU)

Bachelors, Masters and Ph.D. students as well as Postdocs perform their research in 18 projects, covering both experimental and theoretical aspects.



Collaborations with further national and international associate partners from Canada, Japan, Switzerland and the US promote the education and research of the transregio members.

Coordinator of the transregio:

Prof. Dr. Jochen Mannhart

Lehrstuhl für Experimentalphysik VI
Zentrum für Elektronische Korrelationen
und Magnetismus
Institut für Physik
Universität Augsburg
86135 Augsburg
Germany

Phone: + 49 (0) 821 598 3650

Fax: + 49 (0) 821 589 3652

Homepage: www.physik.uni-augsburg.de/transregio

Transregional Collaborative
Research Center
TRR 80

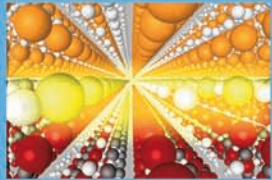
From Electronic Correlations to Functionality



Novel Materials
Future Electronics

Research

Currently electronics makes use of semiconductor-based heterojunctions and metals where electrons behave as independent particles. If we include correlations advanced functionality and improved performance are foreseen. Such electronic correlations induce magnetism, ferroelectricity and superconductivity. To functionalize such phenomena the transregio TRR 80 will explore novel materials and heterostructures for future electronics.

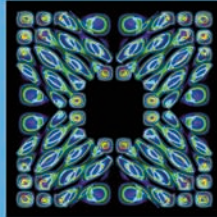


Two-dimensional electron liquid (yellow) at the interface between SrTiO₃ (bottom) and LaAlO₃ (top). (AU)

We must develop advanced experimental techniques and theoretical approaches to face this challenge. The cooperative research is performed by the Universität Augsburg (AU), Technische Universität München (TUM), LMU München, Max-Planck-Institut für Festkörperforschung in Stuttgart and the Walther-Meißner-Institut (WMI) der Bayerischen Akademie der Wissenschaften in Garching. The transregio TRR 80 is funded by the Deutsche Forschungsgemeinschaft with 8 M€ from 2010 to 2013.

Locations and Facilities

Researchers in Augsburg and Munich seek the discovery of novel electronic phases in correlated materials. The neutron source FRM II of TUM in Garching provides them with tools which are unique in the world.



Theoretical prediction of the electron density in a superconducting ring. (FL)



Ultra-high vacuum compatible image furnace for the growth of single crystals. (TUM)



Beamline NEPOMUC at FRM II, the neutron research reactor Heinz Maier-Leibnitz of TUM. (WS)



Researchers of transregio TRR 80. (AU)



31. März 2010

Institut für Physik, Universität Augsburg, R. 1004 HZ

Programm

- 13:30 **Eröffnung des Transregios TRR 80**
From Electronic Correlations to Functionality
- Begrüßung durch den Präsidenten der Universität Augsburg,
Herrn Prof. Dr. W. Bottke
- Grußworte von Frau Prof. Dr.-Ing. L. Meng
Vizepräsidentin der TU München
- Grußworte von Frau Ministerialrätin M. Hoebbel
Bayerisches Staatsministerium für Wissenschaft, Forschung und Kunst
- Grußworte von Herrn Prof. Dr. A. Wixforth
Dekan der Mathematisch-Naturwissenschaftlichen Fakultät
der Universität Augsburg
- 14:00 **Der TRR 80: Eine großartige Chance für Forschung und Bildung**
Prof. Dr. J. Mannhart, Universität Augsburg
- 14:15 **Vom Hörsaal in die Forschung: Nachwuchsförderung im TRR 80**
Prof. Dr. C. Pfeleiderer, TU München
- 14:30 **Die Neutronenquelle FRM II – Brilliant und einmalig**
Prof. Dr. P. Böni, TU München
- 14:45 **Kaffeepause**
- 15:15 **Understanding the Electronic Properties of Novel Materials:
An Experimentalist's View**
Prof. Dr. J. Mesot, Direktor des Paul Scherrer Instituts in Villigen
- 16:00 **Neue Materialien – neue Eigenschaften und Herausforderungen**
Prof. Dr. M. Sigrist, Institut für Theoretische Physik, ETH Zürich
- 16:45 **Empfang**