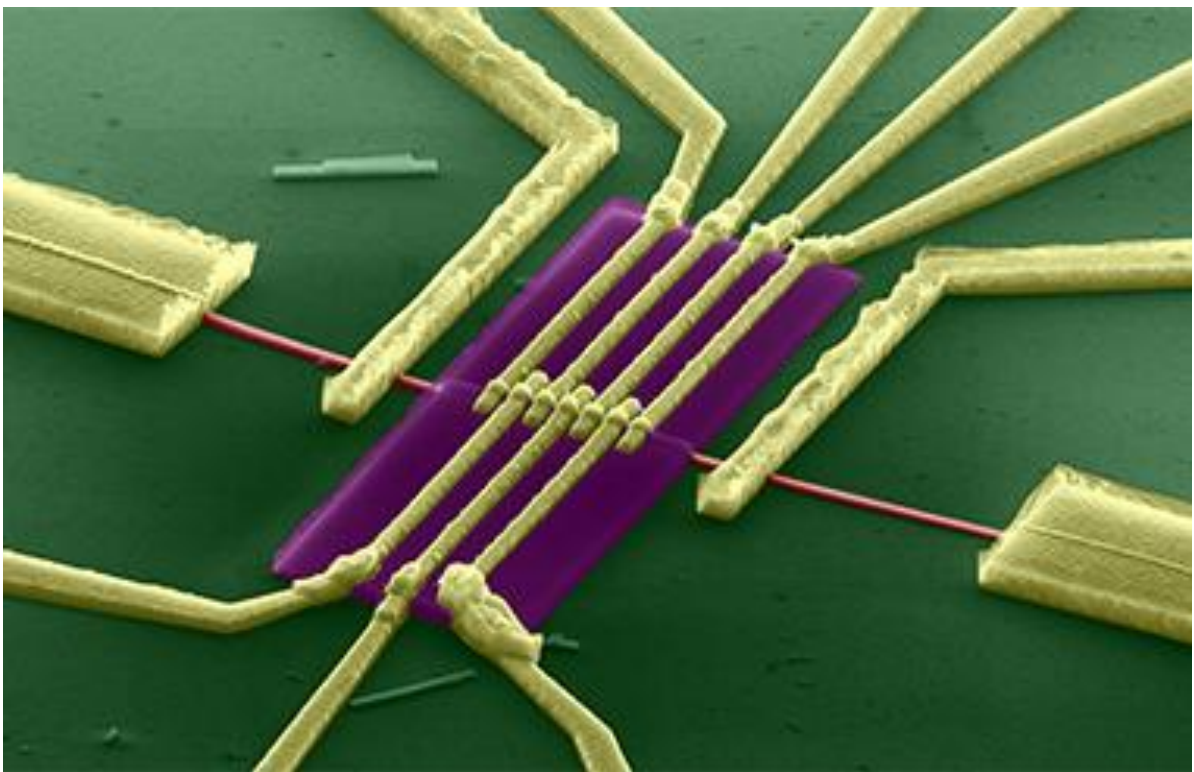


nanoelectronic days 2015 **“Green-IT“**

27 – 30 April 2015
Forschungszentrum Jülich, Jülich, Germany



Programme
(as of 30 March 2015)

Programme at a Glance

	Monday, 27 April 2015	Tuesday, 28 April 2015	Wednesday, 29 April 2015	Thursday, 30 April 2015
Morning		SESSION 3: Emerging Technologies I: Nanowires 9.00 – 12.00 (*)	SESSION 5: Steep Slope Devices 9.00 – 12.00 (*)	SESSION 7: Towards Zero Power Systems 9.00 - 11.30(*)
	Registration 11.00 – 12.00			Concluding Remarks 11.30 – 12.00
Noon	Lunch 12.00 -13.00	Lunch 12.00 -13.30	Lunch 12.00 -13.30	
Afternoon	Welcome Address 13.15 - 13.40			All sessions marked by (*) include a 20-minute coffee break.
	SESSION 1: Energy Efficiency as the Driver for Future Information Technology 13.45 – 15.00	SESSION 4: Nanoswitches II 13.30 – 16.30 (*)	SESSION 6: Emerging Technologies II: Hybrid Structures And New Materials 13.30 – 16.30 (*)	
	HNF and Nanocluster Tour 15.00-16.00			
	SESSION 2: Nanoswitches I 16.00 – 18.40 (*)	Poster Session 16.30 – 19.00	Lab Visits 16.30 – 18.00	
Evening			Conference Reception 19.00	

Monday, 27 April

11:00 - 12:00	REGISTRATION
12:00 - 13:00	<i>LUNCH</i>
13:15 – 13:40	WELCOME ADDRESS
13:40 – 15:00	<i>SESSION 1: Energy Efficiency As The Driver For Future Information Technology</i>
13:40-14:20 Invited talk	Heike Riel (IBM Research, Rueschlikon, CH) <i>Semiconducting Nanowires – What are they good for in future Nanoelectronics</i>
14:20-15:00 Invited talk	Myron Flickner (IBM Research Almaden, USA) <i>TrueNorth: A Brain Inspired Supercomputer on a Chip</i>
15:00 – 16:00	HNF AND NANOCLUSTER TOUR
16:00 – 18:40	<i>SESSION 2: Nanoswitches I</i>
16:00 – 16:40 Invited talk	Stanley Williams (Hewlett Packard, USA) <i>A scalable neuristor built with Mott memristors</i>
16:40 – 17:20 Invited talk	Klaus Kern (MPI Stuttgart, Germany) <i>Quantum Engineering of Metal-Organic Contacts</i>
17:20 – 17:40	<i>COFFEE BREAK</i>

17:40 – 18:00	<p><i>Redox-based resistive switching memories (ReRAMs) – new trends and achievements</i></p> <p>Ilia Valov and Rainer Waser</p> <p>Forschungszentrum Jülich, PGI-7, Electronic Materials, 52425 Jülich, Germany</p>
18:00-18:20	<p><i>ReRAM technology developments for ultra-low power FPGA architectures</i></p> <p>M. Thammasack, F. Messerschmitt, J. Rupp, P.-E. Gaillardon, G. De Micheli</p> <p>ReRAM Technology Developments for Ultra-Low Power FPGA Architectures, EPFL, Integrated Systems Laboratory, Lausanne, Switzerland; ETHZ, Electrochemical Materials, Zurich, Switzerland</p>
18:20 – 18:40	<p><i>Physics of the switching kinetics in redox-based resistive memories</i></p> <p>S. Menzel, K. Fleck, Y. Nishi, S. Tappertzhofen, J. van den Hurk, B. Rösgen, A. Marchewka, V. Rana, I. Valov, U. Böttger, R. Waser</p> <p>Forschungszentrum Jülich, PGI-7, 52425 Jülich, Germany; Institut für Werkstoffe der Elektrotechnik II, RWTH Aachen, Aachen, 52074, Germany; Advanced LSI Technology Laboratory, Corporate Research and Development Center, Toshiba Corporation, Kawasaki 212-8582, Japan</p>

Tuesday, 28 April

9:00 - 12:00		SESSION 3: Emerging Technologies I: Nanowires
9:00 – 9:40 Invited talk	Lars Samuelson (Lund University, Sweden) <i>NANOWIRES - basic materials science creating real-world applications</i>	
9:40 – 10:00	<i>Influence of growth parameters on electrical transport characteristics in InAs Nanowires</i> J. Becker, S. Morkötter, J. True, S. Hertenberger, M. Bichler, G. Abstreiter, J. Finley, and G Koblmüller TU München, Walter Schottky Institut, Garching, Germany	
10:00 – 10:20	<i>On the open-circuit-voltage of nanowire solar cells</i> W. Prost, J. Schlaak, M. Wehmeyer, Y. Cui, E.P.A.M. Bakkers, P. Kleinschmidt, T. Hannappel, F.-J. Tegude Univ. Duisburg-Essen, Faculty of Engineering, and CENIDE, Duisburg, Germany; TU Eindhoven, Department of Applied Physics, Eindhoven, the Netherlands; TU Ilmenau, Department of Photovoltaics, Ilmenau, Germany	
10:20 – 10:40	COFFEE BREAK	
10:40 – 11:00	<i>Charge transport along GaAs Nanowires: Surface conductivity and band bending</i> S. Korte, M. Steidl, W. Zhao, W. Prost, F. Lüpke, V. Cherepanov, B. Voigtländer, P. Kleinschmidt, T. Hannappel Forschungszentrum Jülich and JARA-FIT, PGI-3, Jülich, Germany; TU Ilmenau, Institute for Physics, Ilmenau, Germany; Univ. Duisburg-Essen, Faculty of Engineering, and CENIDE, Duisburg, Germany	
11:00 – 11:20	<i>InAs nanowire junctions grown on Si (100) substrates</i> T. Rieger, D. Rosenbach, D. Vakulov, S. Heedt, M.I. Lepsa, Th. Schäpers, D. Grützmacher Forschungszentrum Jülich and JARA-FIT, PGI-9, Jülich, Germany	
11:20 – 11:40	<i>Coherent Transport in GaAs/InAs Core/Shell Nanowires</i> F. Haas, P. Zellekens, T. Wenz, S. Dickheuer, Y. Günel, Ö. Gül, t. Rieger, M.I. Lepsa, N. Demarina, D. Grützmacher, H. Lüth, Th. Schäpers Forschungszentrum Jülich and JARA-FIT, PGI-9, Jülich, Germany; Forschungszentrum Jülich and JARA-FIT, PGI-2, Jülich, Germany	

12:00 – 13:30

LUNCH

13:30 – 16:30

SESSION 4: Nanoswitches II

13:30 – 14:10

Invited talk

Matthias Wuttig (RWTH Aachen University, Germany)

Unravelling the transformation kinetics in Phase Change Memories

Metal Organic Vapour Phase Epitaxy of trigonal $\text{Ge}_7\text{Sb}_2\text{Te}_4$

M. Schuck, S. Rieß, M. Schreiber, M. Mennicken, M. van der Ahe, G. Mussler, P. Jost, D.Grützmacher, H. Hardtdegen

14:10 – 14:30

Forschungszentrum Jülich and JARA-FIT, PGI-9, Jülich, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
RWTH Aachen, I. Physikalisches Institut 1a and JARA-FIT, Aachen, Germany

14:30 – 14:50

Atomic Layer Deposition of Transition Metal Oxide Thin Films for Nanoscale ReRAM Devices

S. Hoffmann-Eifert, H. Zhang, A. Hardtdegen, C. Funck, N. Aslam

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

14:50 – 15:10

COFFEE BREAK

15:10 – 15:30

Chalcogenide Superlattices (CSL) for energy efficient data storage by magnetron sputtering

F. R. Lange, J. Momand, H. Hollermann, J. Banchewski, S. Jakobs, A. Redaelli, E. Varesi, B.J. Kooi, M. Wuttig

RWTH Aachen, 1. Physikalisches Institut (1A) and JARA-FIT, Aachen, Germany;
Univ. Groningen, Zernike Institute for Advanced Materials, Groningen, the Netherlands;
Micron Semiconductor Italia, Agrate Brianza, Italy

15:30 – 15:50

Investigation of resistive switching in various Cr-doped Vanadium-Oxides

J. Rupp, D.J. Wouters, M. Querré, E. Janod, M.-P. Besland, R. Dittmann, R. Waser

RWTH Aachen, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
Univ. de Nantes, Institut des Matériaux Jean Rouxel, Nantes, France

15:50 – 16:10

Spectromicroscopic insights into local switching processes in SrTiO_3 -based memristive devices

C. Bäumer, C. Schmitz, P. Müller, K. Skaja, V. Feyer, C. Wiemann, C.M. Schneider, R. Waser, R. Dittmann

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-6, Jülich, Germany

Disorder-induced localization in the pseudo-binary alloys between $\text{Ge}_3\text{Sb}_2\text{Te}_6$ and GeTe

16:10 – 16:30

P. Jost, H. Volker, A. Poitz, C. Poltorak, P. Zalden, T. Schäfer, F.R. Lange, R.; Schmidt, B. Holländer, M.R. Wirtsohn, M. Wuttig

RWTH Aachen, 1. Physikalisches Institut IA, Aachen, Germany

16:30 – 19:00

POSTER SESSION

Wednesday, 29 April

9:00 - 12:00		SESSION 5: Steep Slope Devices
9:00 – 9:40	Invited talk	Alexander Zaslavsky (Brown Univ., USA) <i>CMOS-compatible alternative transistors: from tunneling to feedback</i>
9:40 – 10:00		<i>Advanced Analytical Modeling of Nanowire Tunnel-FETs</i> M. Graef, F. Hain, F. Hosenfeld, B. Iniguez, A. Kloes TH Mittelhessen, Competence Centre for nanotechnology and Photonics, Giessen, Germany; Univ. Rovira I Virgili, DEEEA, Tarragona, Spain
10:00 – 10:20		<i>Gate all around TFETs for energy efficient nanoelectronics</i> G.V. Luong, K. Narimani, S. Trelenkamp, K.K. Bourdelle, Q.T. Thao and S. Mantl Forschungszentrum Jülich and JARA-FIT, PGI-9, Jülich, Germany; Helmholtz-Nanoelectronic facility (HNF), Forschungszentrum Jülich, Germany; SOITEC, Parc Technologique des Fontaines, Bernin, France
10:20 – 10:40		COFFEE BREAK
10:40 – 11:20	Invited talk	Anne Verhulst (IMEC, Belgium) <i>The future of tunnel field-effect transistors</i>
11:20 – 11:40		<i>NEMO5 – A general purpose 3D, 2D, 1D Nanoelectronic Modeling Toolkit</i> G. Klimeck et.al. Purdue University, US
11:40 – 12:00		<i>Industrial characterization of nanoelectronic devices based on neutrons and synchrotron X-rays non-conventional techniques</i> E. Capria, J. Beaucourt, I. Bertrand, N. Bicais, E. Boller, C. Curfs, G. Chahine, A. Fitch, R. Kluender, T.A. Lafford, Y.M. Le-Vaillant, F. Lorut, J.S. Micha, E. Mitchell, O. Robach, J.C. Royer, T. Schulli, J. Segura-Ruiz European Synchrotron Radiation Facility, Grenoble France Institute Laue-Langevin; ST Microelectronics, Crolles, France; CEA-LETI, Grenoble, France;CEA-INAC/CNRS
12:00 – 13:30		LUNCH

13:30 – 16:30 **SESSION 6: Emerging Technologies II: Hybrid Structures
And New Materials**

13:30 – 14:10
Invited talk **Henning Riechert (PDI Berlin, Germany)**
New epitaxial rules for the growth of two-dimensionally bonded materials

Exploring the growth of organic semiconductors on various graphene substrates for potential device applications

14:10 – 14:30 **C. Teichert, M. Kratzer, G. Hlawacek, A. Nevosad, C. Ganser, S. Klima, F. Khokhar, R. van Gastl, B. Poelsema, H. Zandvliet, B. Vasic, A. Matkovic, U. Ralevic, R. Gajic, B.C. Bayer, P.R. Kidambi, A. Cabrero-Vilatela, R.S. Weatherup, S. Hofmann**

Montanuniversität Leoben, Inst. of Physics, Leoben, Austria;
Univ. of Twente, Physics of Interfaces and Nanomaterials, MESA+
Inst. For Nanotechnology, Enschede, the Netherlands;
Univ. of Belgrade, Inst. of Physics, Belgrade, Serbia;
Univ. of Cambridge, Department of Engineering, Cambridge, UK;
Univ. of Vienna, Faculty of Physics, Vienna, Austria

14:30 – 14:50 *Vapor phase deposition of bismuth selenide on hexagonal boron nitride*
S. Jafarpisheh, K. Watanabe, T. Taniguchi, B. Beschoten and C. Stampfer
RWTH Aachen University, 2nd Institute of Physics and JARA-FIT, Aachen, Germany;
National Institute for Materials Science, Tsukuba, Japan;
Forschungszentrum Jülich, PGI-9 and JARA-FIT, Jülich, Germany

14:50 – 15:10 **COFFEE BREAK**

15:10 – 15:30	<p><i>Lasing action in fundamental direct band gap GeSn group IV alloys</i> S. Wirths, D. Stange, R. Geiger, N. von den Driesch, G. Mussler, Z. Ikonic, J.M. Hartmann, S. mantl, J. Faist, H. Sigg, D.M. Buca, D. Grützmacher</p> <p>Forschungszentrum Jülich and JARA-FIT, PGI-9, Jülich, Germany; Paul Scherrer Institut, Laboratory for Micro- and Nanotechnology, Villigen, Switzerland; ETH Zürich, Institute for Quantum Electronics, Zürich, Switzerland; Univ. of Leeds, School of Electronic and Electrical Engineering, Leeds, UK; Univ. of Grenoble Alpes, and CEA,/LETI Campus, Grenoble, France</p>
15:30 – 15:50	<p><i>Adsorption and manipulation of W₃O₉ nanoclusters on the oxidized Pt₃Ti(111) alloy surface</i> M. Moors, R. Waser Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany</p>
15:50 – 16:10	<p><i>3D visual feedback during molecular manipulation</i> M.F.B. Green, P. Leinen, T. Esat, C. Wagner, F.S. Tautz, R. Temirov Forschungszentrum Jülich and JARA-FIT, PGI-3, Jülich, Germany</p>
16:10 – 16:30	<p><i>Anisotropic magnetothermopower in Co-based trilayers: A comparison between Cu, Pd, and Pt as heterostructure partners</i> V. Popescu, P. Kratzer Univ. Duisburg-Essen, Faculty of Physics and CENIDE, Duisburg, Germany</p>
16:30 – 18:00	LAB VISITS
19:00	CONFERENCE RECEPTION

Thursday, 30 April

<u>9:00 - 11:30</u>		<u>SESSION 7: Towards Zero Power Systems</u>
9:00 – 9:40 Invited talk	Adrian M. Ionescu (Nanolab, Ecole Polytechnique Fédérale de Lausanne, Switzerland) <i>Energy efficient devices and technologies for functional diversification in future Cyber-Physical Systems</i>	
9:40 – 10:00	<i>Limits of power delivery and power consumption in nanoelectronic systems imposed by interconnect parasitics</i> A. Heittmann, Q. Wang and T.G. Noll RWTH Aachen, Electrical Engineering and Computer Systems, Aachen, Germany	
10:00 – 10:20	<i>Complementary resistive switch based neuromorphic associative capacitive network</i> L. Nielen, A. Siemon, S. Tappertzhofen, R. Waser, S. Menzel, E. Linn RWTH Aachen, Inst. Für Werkstoffe der Elektrotechnik II, Aachen, Germany; Univ. of Cambridge, Department of Engineering, Cambridge, UK; Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany	
10:20 – 10:40	COFFEE BREAK	
10:40 – 11:00	<i>A critical assessment of noise in the braiding of nanowire Majorana particles</i> F.L. Pedrocchi, D.P. DiVincenzo RWTH Aachen and Forschungszentrum Jülich, JARA Institute for Quantum Information, Germany	
11:00 – 11:30	<i>Concept and control electronics for an integrated quantum processor</i> Hendrik Bluhm RWTH Aachen and Forschungszentrum Jülich, JARA Institute for Quantum Information, Germany; Purdue University, US	
11:30	CONCLUDING REMARKS	

Posters

P1: *Atmosphere- and temperature dependent electrical characterization of SrTiO₃-based memristive devices*

P. Müller, C. Bäumer, R. Dittmann

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P2: *Switching of Schottky barrier observed at YBCO-STO interface by EBIC method*

M.I. Faley, O. Faley, R. Dittmann, R. Waser, U. Klemradt, R.E. Dunin-Borkowski

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany,
Forschungszentrum Jülich, PGI-5, Ernst Ruska-Centre and JARA-FIT, Jülich,
Germany;
RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany

P3: *Memristive models for simulation of logic-in-memory functions*

E. Linn, A. Sieman, R. Waser, S. Menzel

RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P4: *Parameter Study of HfO_x-based ReRAM*

C. La Torre, M. Kühn, S. Starschich, S. Menzel, U. Böttger, R. Waser

RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P5: *RESET Kinetics of Resistive Memory Devices*

K. Fleck, U. Böttger, R. Waser, S. Menzel

RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P6: *Filamentary resistive switching of reduced TiO₂ related to defect agglomerations and phase transitions*

Ch. Rodenbücher, Maciej Rogala, G. Bihlmayer, W. Speier, K. Szot

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
Univ. Lodz, Faculty of Physics and Applied Informatics, Lodz, Poland;
Univ. of Silesia, Inst. of Physics, Katowice, Poland

P7: Logic-in-memory operation in complementary resistive switches

T. Breuer, A. Siemon, W. Kim, S. Menzel, V. Rana, R. Waser, E. Linn

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany

P8: Influence of the local oxygen vacancy concentration on the Piezoresponse of Strontium Titanate thin films

M. Andrä, C. Bäumer, C. Xu, R. Dittmann, R. Waser

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P9: Adder for ReRAM passive nano-crossbar architectures

A. Siemon, S. Menzel, R. Waser, E. Linn

RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P10: Resistive Switching behaviour in ReRAM cells of oxide bilayers grown by atomic layer depositions

H. Zhang, N. Aslam, S. Hoffmann-Eifert

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P11: Impact of the cation-stoichiometry on the resistive switching and data retention of SrTiO₃ thin films

N. Raab, C. Bäumer, F. Hensling; R. Dittmann

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P12: BiFeO₃-based resistive switching cells with a tunable rectifying contact

T. You, N. Du, St. Slesazeck, Th. Mikolajick, G. Li, D. Bürger, I. Skorupa, H. Stöcker, B. Abendroth, A., K. Volz, O. G. Schmidt, H. Schmidt

Material Systems for Nanoelectronics, Technische Universität Chemnitz, Germany;
NaMLab gGmbH, Dresden, Germany;

Institute of Semiconductors and Microsystems, Technische Universität Dresden, Germany;

Institute for Integrative Nanosciences, IFW Dresden, Germany;

HZDR Innovation GmbH, Dresden, Germany;

Institut für Experimentelle Physik, Technische Universität Bergakademie Freiberg, Germany;

Materials Science Center and Faculty of Physics, Philipps-Universität Marburg, Germany,

P13: *Effect of defects on electronic transport and magnetism in NdGaO₃/SrTiO₃ heterostructures*

F. Gunkel, B. Kim, S. Harashima, S. Hofmann-Eifert, R. Waser, C. Bell, H.Y. Hwang, R. Dittmann

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany;
Stanford University, Geballe Laboratory for Advanced Materials, Stanford, USA

P14: *Enhancing interfacial electron mobility of Perovskite oxide hetero structures*

R.A. Heinen, F. Gunkel, S. Hoffmann-Eiffert, R. Waser, R. Dittmann

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P15: *3-bit read scheme for single layer Ta₂O₅ ReRAM*

A. Schönhals, S. Menzel, and R. Waser

RWTH Aachen, Institut für Werkstoffe der Elektrotechnik II, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P16: *A memristor-based hardware cryptography*

N. Du, N. Manjunath, Y. Shuai, D. Bürger, I. Skorupa, R. Schüffny, C. Mayr, D. N. Basov, M. Di Ventra, O. G. Schmidt, H. Schmidt

Faculty of Electrical Engineering and Information Technology, TU Chemnitz, Germany;
State Key Laboratory of Electronic Thin Films and Integrated Devices, UESTC, China;
Department of Electrical Engineering and Information Technology, TU Dresden, Germany;
Neuromorphic Cognitive Systems Group, Institute of Neuroinformatics, University of Zurich and ETH Zurich, Switzerland;
Department of Physics, University of California, USA;
Institute for Integrative Nanosciences, IFW Dresden, Germany

P17: *AC electrical measurement on amorphous phase change materials*

Chen Chao

RWTH Aachen, 1. Physikalisches Institut (1A) and JARA-FIT, Aachen, Germany

P18: *STM investigations of resistive switching on binary metal oxides*

A. Wedig, M. Moors, T. Hasegawa, M. Aono, R. Waser, I. Valov

RWTH Aachen, Institut für Werkstoffe der Elektrotechnik II, Aachen, Germany;
Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany

P19: *Optical phonons behavior in Ge-Sb-Te phase change alloys from the temperature dependent FTIR spectroscopy*

K. Shportko, V.E. Lashkarev, M. Wuttig

RWTH Aachen, 1. Physikalisches Institut (1A) and JARA-FIT, Aachen, Germany;
Institute for semiconductor physics of NAS of Ukraine, Kyiv, Ukraine

P20: *Structural characterization of the phase change material Ge₁Sb₂Te₄ grown by MOVPE*

S. Rieß, M. Schuck, M. Bornhoeft, J. Mayer, M. von der Ahe, G. Mussler, M. Mennicken, G. Roth, D. Grützmacher, P. Jost and H. Hardtdegen

Forschungszentrum Jülich, PGI 9 and JARA-FIT, Jülich, Germany;
RWTH Aachen, Central Facility for Electron Microscopy and Ernst Ruska-Centre, Aachen, Germany;
Forschungszentrum Jülich, PGI 6, and JARA –FIT, Jülich, Germany;
RWTH Aachen, Institute of Crystallography, Aachen, Germany;
RWTH Aachen, 1. Physikalisches Institut IA, Aachen, Germany

P21: *Calculation of electron energy loss spectra for resistive switching oxides from first principles*

R. Kovacik, M. Lezaic and S. Blügel

Peter Grünberg Institut and Institute for Advanced Simulation,;
Forschungszentrum Jülich and JARA, 52425 Jülich, Germany

P22: *KKRnano: A Massively Parallel KKR Green's Function Code for Large Scale Systems*

M. Bornemann, R. Zeller, R. Kovacik, P.H. Dederichs and S. Blügel

Peter Grünberg Institute and Institute for Advanced Simulation, Forschungszentrum Jülich GmbH and JARA, Jülich, Germany

P23: *Chemical solution deposition derived calcium-doped barium niobate thin films as proton conducting electrolytes for low temperature operating solid oxide fuel cells*

D. Griesche, T. Schneller, R. Waser

Forschungszentrum Jülich and JARA-FIT, PGI-7, Jülich, Germany;
RWTH Aachen University, Inst. für Werkstoffe der Elektrotechnik, Aachen, Germany

P24: *III-nitride multi quantum well structures for energy saving optoelectronics*

T. Nolte, M. Mikulics, M. Schreiber, M. von der Ahe, G. Mussler, H. Hardtdegen and D. Grützmacher

PGI 9- and JARA - FIT, Forschungszentrum Jülich GmbH, Germany

P25: *Electrical transport in InAs nanowire junctions*

D. Vakulov, S. Heedt, T. Rieger, D. Rosenbach, M.I. Lepsa, D. Grützmacher, T. Schäpers

Forschungszentrum Jülich, PGI 9 and JARA-FIT, Jülich, Germany

P26: *Investigation of the electronic structure of GaAs/InAs core/shell Nanowires by means of X-ray photoelectron spectroscopy*

B. Khanbabaee, T. Rieger, N. Demarina, D. Grützmacher, M.I. Lepsa, R. Timm, U. Pietsch

Univ. Siegen, Department of Physics, Siegen, Germany;
Forschungszentrum Jülich, PGI 9 and JARA-FIT, Jülich, Germany;
Lund Univ., Synchrotron Radiation research and the Nanometer Structure Consortium, Lund, Sweden

P27: *Random distribution of Phase domains in GaAs Nanowires*

A. Davtyan, a. Biermanns, O. Loffeld, U. Pietsch

Univ. Siegen, NT faculty, Siegen, Germany

P28: *Growth and Characterization of lateral InAs nanowires on Silicon (110) substrates*

T. Wierzkowski, C. Jahnz, A. Fox, M. Mikulics, D. Grützmacher, H. Hardtdegen

Forschungszentrum Jülich, PGI 9 and JARA-FIT, Jülich, Germany

P29: *Atomistic calculation of transport in Si nanowires*

I. Bejenari, P. Kratzer

Univ. of Duisburg-Essen, Faculty of Physics, Duisburg, Germany

P30: *Surface and Step Conductivities on Si(111) Surfaces*

S. Just, M. Blab, S. Korte, V. Cherepanov, H. Soltner, and B. Voigtländer

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P31: *Studying the influence of surface passivation on charge carrier distribution of electrically contacted InAs Nanowires with Infrared s-SNOM*

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P32: *Direct electrochemical assembly of dendrites and nanowires of metals and metal alloys connected to external circuitry*

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P33: *Photo-responsive self-assembled Porphyrin nanostructures*

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P34: *Chemical functionalization of the magnetic exchange coupling of hybrid organic-ferromagnetic interfaces*

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P35: *Experimental demonstration of improved TFET characteristics by exploitation of line tunneling*

S. Blaeser, S. Glass, S. Richter, S. Wirths, S. Trelenkamp, D.M. Buca, Q.T. Zhao, S. Mantl

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P36: *Doping of HfO₂ gate oxides to raise the dielectric constant*

C.U. Tromm, A. Schäfer, F. Wendt, W. Zander, A. Tiedemann, K.-H. Deussen, J. Schubert, M. Luysberg, S. Mantl

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P37: *Investigation of oxygen vacancies in HfO₂ from density functional theory*

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P38: *Photoreduction and photoinduced synthesis of platinum catalysts with clean surface*

Xiao Liu, M. Heggen, E. Kuposova, A. Offenhäuser, Y. Mourzina

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P39: *Direct band gap GeSn group IV alloys for electronic applications*

N. von den Driesch, C. Schulte-Braucks, S. Wirths, G. Mussler, Z. Ikonic, J.M. Hartmann, D. Grützmacher; S. Mantl, D. Buca

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P40: *Ultra-sensitive Hall sensors based on graphene boron nitride heterostructures*

Jan Dauber, Abhay A. Sagade, Martin Oellers, Kenji Watanabe, Takashi Taniguchi, Daniel Neumaier and Christoph Stampfer

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P41: *Scanning Quantum Dot Microscopy*

R. Temirov, Chr. Wagner, M. F. B. Green, Ph. Leinen, T. Deilmann, P. Krüger, M. Rohlfing, and F. St. Tautz

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P42: *Electronic structure and structural Integrity of Single adsorbed double-decker Phthalocyanine Molecules*

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P43: *Material sensitive coherent diffractive imaging employing a gas discharge plasma extreme ultraviolet source*

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P44: *Photochromism in Molecular Ensemble Contacts*

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P45: *Electronic structure and ferromagnetic properties of Al/EuO/SrTiO₃ heterostructures*

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P46: *Enhanced ferrimagnetism in auxetic NiFe₂O₄ in the crossover to the ultrathin film limit*

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P47: *Magnetic oxides by design - a combined MBE & XPS oxide spintronics tool*

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P48: *Liquid-Gated Si Nanowire FETs: Gate Coupling Effect*

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