

Micro- and Nanostructure Research: Cleanroom Linz

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The research in the cleanrooms of the “*Institut für Halbleiter-und Festkörperphysik*” is strongly supported by the Society for Microelectronics (GMe). In 2003, the central research focus was on semiconductor hetero- and nanostructures, thus forming a strong building block of the “Nanoscience and Technology” research activities of the Johannes Kepler University Linz. The research work encompasses all aspects of semiconductor nanostructures, ranging from nanofabrication, to fundamental investigations and modeling of physical properties, up to the realization of novel nanostructure devices. Nanostructures are fabricated using advanced lithography and processing techniques such as electron beam lithography as well as by self-assembly based on molecular beam epitaxy. In the Christian-Doppler Lab, which is also situated at the institute, the simulation and fabrication of photonic crystals for various optical applications is performed. The class 100 clean room facility forms the base for the processing equipment at the institute.

The funding of the activities in the cleanrooms at the University of Linz which are jointly used by several groups is of vital importance for our micro- and nanostructure research activities. This basic funding allows for investigations which are made possible through additional funding coming from the FWF, the FFF, the Christian-Doppler society, the European Commission, as well as through cooperations with industrial groups as listed in the report.

The fundamental structural, electronic, optical and magnetic properties of nanostructures and semiconducting layers are studied using a large variety of techniques. These range from advanced x-ray scattering techniques using synchrotron radiation, high-resolution electron microscopy, scanning force and scanning tunneling microscopy, optical spectroscopy, magnetic Squid investigations as well as low temperature magnetotransport measurements. The focus of research is to correlate the electronic properties of nanostructures with the fabrication processes and structural properties, taking advantage of the complementarity of information gained by the different techniques and modeling tools. A strong emphasis is put on infrared spectroscopy of the interband and intersubband electronic transitions in SiGe and narrow band gap semiconductor heterostructures, as well as on ballistic and quantum transport studies of SiGe and III-V hetero- and nanostructures in the milli-Kelvin temperature regime. In addition, the magnetic properties of magnetic semiconductor hetero- and nanostructures are investigated and novel tools for nanostructure investigations based on synchrotron light sources are developed.

Several research activities are devoted to the fabrication of semiconductor hetero- and nanostructure devices. In the optical area, mid-infrared intersubband and interband detectors, quantum cascade structures, mid-infrared vertical cavity surface emitting lasers and resonant cavity detectors are modeled, fabricated and investigated. The Christian-Doppler Laboratory at the institute is devoted to theoretical and practical aspects of photonic crystals for e.g. waveguide applications and polarization splitting in the near-infrared telecommunication spectral range and three patents were applied in this field in the last year. In the electric/electronic application field, devices such as

quantum dot and single electron transistors were formed in the Si/SiGe and AlGaAs material systems and investigated in the milli-Kelvin regime. Novel spintronic devices that take advantage of the spin degree of freedom in order to produce new functionalities are developed as well in the Si/SiGe system. And finally in the device area high-mobility n-channel organic field-effect transistors based on epitaxially grown C₆₀ films were produced and characterized by electrical I-V curve measurements.

From the materials side, a strong focus is on Si/SiGe/SiGeC based hetero- and nanostructures for which a large molecular beam epitaxy system is operated in the clean room of the institute. There is also extensive work on narrow gap IV-VI compound semiconductors, which includes PbSe as well as PbTe based materials and magnetic europium chalcogenide semiconductors. For these materials another two molecular beam epitaxy systems are available at the institute. Gallium-Nitride material layers are as well being fabricated at the institute by a metal-organic chemical vapor deposition (MOCVD) system, where the layers are doped with iron and manganese in order to test the electrical and magnetic properties. The fabricated structures from the institute in Linz are supplied also to external research groups outside in the framework of long term international collaborations. On the other hand, also materials and structures including SiGe as well as GaAs/GaAlAs based structures are supplied from outside groups for further processing and analysis with techniques developed at our institute.

The research activities are embedded in several large research initiatives and project clusters such as the IRON special research program, the NIS Nanostructured Surface and Interface project cluster, as well as the SANDiE European network of excellence and several other EU funded research projects.

A detailed presentation of the mentioned physical investigation methods, devices fabrication and characterization and material systems is given in the separate, individual reports below.

Project Information for 2004

Project Manager

Associate Prof. Dr. Gerhard Brunthaler

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Project Group

Last Name	First Name	Status	Remarks
Bauer	Günther	University professor	
Heinrich	Helmuth	University professor	
Jantsch	Wolfgang	University professor	
Schäffler	Friedrich	University professor	
Brunthaler	Gerhard	Associate professor	
Palmetshofer	Leopold	Associate professor	
Springholz	Gunther	Associate professor	
Sitter	Helmut	Associate professor	
Bonanni	Alberta	Assistant professor	
Heiss	Wolfgang	Assistant professor	
Fromherz	Thomas	Assistant professor	
Stangl	Julian	Assistant professor	
Andreev	Andrej	Assistant professor	
Binder	Fritz	Technician	
Bräuer	Stephan	Technician	
Fuchs	Othmar	Technician	
Jägermüller	Josef	Technician	
Nusko	Ekkehard	Electronics Engineer	
Vorhauer	Ernst	Electronics engineer	
Andreeva	Svetlana	Lab Technician	FWF-START
Halilovic	Alma	Lab Technician	½ paid by GME
Hasenfuss	Christine	Lab Technician	CD Lab
Haslgrübler	Klaus	Lab Technician	½ paid by GME, till 31.3.2004
Kainz	Ursula	Lab Technician	½ position, till Oct. 2004
Praus	Antonia	Lab Technician	½ position, since Nov. 2004
Wirtl	Elisabeth	Phys. Lab. Assistent	
Firmberger	Johanna	Apprentice	
Hingerl	Kurt	Head of CD Lab	
Holy	Vaclav	Guest Researcher	Charles Univ. Prag

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Andreev	Andrej	Post Doc	FWF
Chen	Gang	Post Doc	FWF
Kocher	Gudrun	Post Doc	CDG
Lechner	Rainer	Post Doc	FWF
Montaigne-R.	Alberto	Post Doc	FWF
Schwarzl	Thomas	Post Doc	FWF
Abtin	Laurel	Ph.D. student	FWF
Achleitner	Joachim	Ph.D. student	
Baumgartner	Eugen	Ph.D. student	FWF
Berer	Thomas	Ph.D. student	FWF, Uni Linz
Böberl	Michaela	Ph.D. student	FWF
Glinsner	Thomas	Ph.D. student	EGV
Gruber	Daniel	Ph.D. student	FWF, Uni Start
Heisl	Elke	Ph.D. student	CDG, till Sept. 2004
Holy	Roman	Ph.D. student	CDT, since Sept. 2004
Kaufmann	Erich	Ph.D. student	FWF
Kovalenko	Maksym	Ph.D. student	FWF
Lichtenberger	Herbert	Ph.D. student	FWF
Lugovyy	Dmytro	Ph.D. student	FWF
Malissa	Hans	Ph.D. student	WIMI
Mundboth	Rajivshing	Ph.D. student	
Novak	Jri	Ph.D. student	EC (SiGeNET, SHINE)
Pachinger	Dietmar	Ph.D. student	FWF
Pillwein	Georg	Ph.D. student	FWF
Rauter	Patrick	Ph.D. student	EC (SHINE)
Rehman-Khan	Aaliya	Ph.D. student	ÖAD
Roither	Jörgen	Ph.D. student	FWF
Schmidegg	Klaus	Ph.D. student	EU ISCE-MOCVD, FWF
Schwinger	Wolfgang	Ph.D. student	FFF
Simbrunner	Clemens	Ph.D. student	EU ISCE-MOCVD
Simma	Matthias	Ph.D. student	FWF
Söllinger	Walter	Ph.D. student	FWF
Wintersberger	Eugen	Ph.D. student	EC (SHINE), FWF
Zarbakhsh	Javad	Ph.D. student	CDG
Anzengruber	Johannes	Diploma student	
Aynul	Islam	Diploma student	CD Lab
Grydlik	Martyna	Diploma student	stipendiat
Hörmann	Thomas	Diploma student	
Huber	Martin	Diploma student	CD Lab
Isfahani	Farnaz	Diploma student	CD Lab
Janecek	Stefan	Diploma student	finished July 2004
Kirchschlager	Raimund	Diploma student	

Last Name	First Name	Status	Remarks
Lindner	Benjamin	Diploma student	finished Nov. 2004
Pichler	Stefan	Diploma student	
Wegscheider	Matthias	Diploma student	

Publications in Reviewed Journals

published 2004

1. C. Schelling, J. Myslivecek, M. Mühlberger, H. Lichtenberger, Z. Zhong, B. Voigtländer, G. Bauer, F. Schäffler, "*Kinetic and strain-driven growth phenomena on Si(001)*", phys. stat. sol. (a) 201, 324-328 (2004) / DOI 10.1002/pssa.2003093966.
2. G. Grabecki, J. Wrobel, T. Dietl, E. Papis, E. Kaminska, A. Piotrowska, A. Ratuszna, G. Springholz, G. Bauer, "*Ballistic transport in PbTe-based nanostructures*", Physica E 20, 236 - 245 (2004).
3. R.T. Lechner, T.U. Schüllli, V. Holy, G. Springholz, J. Stangl, A. Raab, G. Bauer, T.H. Metzger, "*Ordering parameters of self-organized three-dimensional quantum-dot lattices determined from anomalous x-ray diffraction*", Appl. Phys. Lett. 84, 885-887 (2004).
4. Zhenyang Zhong, Gang Chen, J. Stangl, T. Fromherz, F. Schäffler, G. Bauer, "*Two-dimensional lateral ordering of self-assembled Ge islands on patterned substrates*", Physica E 21, 588-591 (2004).
5. R. T. Lechner, T. Schüllli, V. Holy, J. Stangl, A. Raab, G. Springholz, G. Bauer, "*3D hexagonal versus trigonal ordering in self-organized PbSe quantum dot superlattices*", Physica E 21, 611-614 (2004).
6. Zhenyang Zhong and G. Bauer, "*Site-controlled and size-homogeneous Ge islands on prepatterned Si (001) substrates*", Appl. Phys. Lett. 84, 1922-1924 (2004).
7. M. Meduna, J. Novak, G. Bauer, V. Holy, C.V. Falub, E. Müller, D. Grützmacher, Y. Campidelli, O. Kermarrec, D. Bensahel, "*Annealing studies of high Ge composition Si/SiGe multilayers*", Z. Kristallogr. 219, 195-200 (2004).
8. S.D. Tsujino, C.V. Falub, E. Müller, M. Scheinert, L. Diehl, U. Gennser, T. Fromherz, A. Borak, H. Sigg, D. Grützmacher, Y. Campidelli, O. Kermarrec, D. Bensahel, "*Hall mobility of narrow Si_{0.2}Ge_{0.8}-Si quantum wells on Si_{0.5}Ge_{0.5} relaxed buffer substrates*", Appl. Phys. Lett. 84, 2829-2831 (2004).
9. J. Fürst, H. Pascher, T. Schwarzl, M. Böberl, G. Springholz, G. Bauer, W. Heiss, "*Continuous-wave emission from midinfrared IV-VI vertical-cavity surface-emitting lasers*", Appl. Phys. Lett. 84, 3268-3270 (2004).
10. T. U. Schüllli, R. T. Lechner, J. Stangl, G. Springholz, and G. Bauer, "*Soft x-ray magnetic scattering from ordered EuSe nanoislands*", Appl. Phys. Lett. 84, 2661-2663 (2004).
11. V. M. Pudalov, M. E. Gershenson, H. Kojima, G. Brunthaler, G. Bauer, "*Are the interaction effects responsible for the temperature and magnetic field dependent conductivity in Si-MOSFETs?*", Phys. Stat. Sol. (b) 241, 47-53 (2004).
12. G. Brunthaler, B. Lindner, G. Pillwein, S. Griesser, M. Prunnila, J. Ahopelto, "*Two-Dimensional Metallic State in Silicon-on-Insulator Structures*", Physica E 22, 252 – 255 (2004).

13. J. Stangl, T. Schüllli, H. Metzger, G. Bauer, "Im Inneren von Halbleiternanostrukturen", *Physik Journal* 3, 33-39 (2004).
14. R. Kirchschrager, W. Heiss, R. T. Lechner, G. Bauer, G. Springholz, "Hysteresis loops of the energy band gap and effective g factor up to 18 000 for metamagnetic EuSe epilayers", *Appl. Phys. Lett.* 85, 67-69 (2004).
15. Zhenyang Zhong, A. Halilovic, H. Lichtenberger, F. Schäffler, G. Bauer, "Growth of Ge islands on prepatterned Si (001) substrates", *Physica E* 23, 243-247 (2004).
16. H. Lichtenberger, M. Mühlberger, C. Schelling, W. Schwinger, S. Senz, F. Schäffler, "Transient-enhanced Si diffusion on natural-oxide-covered Si(0 0 1) nano-structures during vacuum annealing", *Physica E* 23, 442-448 (2004).
17. J. Stangl, V. Holy, G. Bauer, "Structural properties of self-organized semiconductor nanostructures", *Rev. Mod. Phys.* 76, 725-783 (2004).
18. H. Malissa, W. Jantsch, M. Mühlberger, F. Schäffler, Z. Wilamowski, M. Draxler, P. Bauer, "Anisotropy of g -factor and electron spin resonance linewidth in modulation doped SiGe quantum wells", *Appl. Phys. Lett.* 85, 1739-1741 (2004).
19. K. Lai, W. Pan, D.C. Tsui, S. Lyon, M. Mühlberger, F. Schäffler, "Two-flux composite fermion series of the fractional quantum hall states in strained Si", *Phys. Rev. Lett.* 93, 156805-1/4 (2004).
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21. J. Stangl, T. Schüllli, A. Hesse, V. Holy, G. Bauer, M. Stoffel, O.G. Schmidt, "Structural properties of semiconductor nanostructures from x-ray scattering", *Adv. in Solid State Phys.* 44, 227-237 (2004).
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26. T. U. Schüllli, R. T. Lechner, J. Stangl, G. Springholz, G. Bauer, M. Sztucki, T. H. Metzger, "Strain determination in multilayers by complementary anomalous x-ray diffraction", *Phys. Rev. B* 69, 195307-1/8 (2004).
27. T. U. Schüllli, R. T. Lechner, J. Stangl, G. Springholz, G. Bauer, M. Sztucki, T. H. Metzger, "Strain determination in multilayers by complementary anomalous x-ray diffraction", *European Synchrotron Radiation Facility (ESRF) Highlights* 2004, 80-81 (2004).
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Aggregate states and energetic disorder in highly-ordered nanostructures of para-sexiphenyl grown by Hot-Wall Epitaxy
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32. A. Yu. Andreev, C. Teichert, G. Hlawacek, H. Hoppe, R. Resel, D.-M. Smilgies, H. Sitter, N. S. Sariciftci
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33. A. Moutaigne, K. Schmidegg, A. Bonanni, H. Sitter, D. Stifter, Li Shunfeng, D. J. As, K. Lischka
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36. W. Jantsch, Z. Wilamowski
Spin Coherence and Manipulation in Si/SiGe Quantum Wells
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37. K. Schmidegg, A. Kharchenko, A. Bonanni, H. Sitter, J. Bethke, K. Lischka
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Morphology and growth kinetics of organic thin films deposited by Hot Wall Epitaxy on KCl substrates
J. Cryst. Growth (Proceedings Grenoble) (2004)
39. A. Bonanni, K. Schmidegg, A. Moutaigne Ramil, A. Kharchenko, J. Bethke, K. Lischka, H. Sitter
On-line growth control of MOCVD deposited GaN and related ternary compounds via spectroscopic ellipsometry and x-ray diffraction
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40. A. Andreev, F. Quochi, A. Kadamchuk, H. Sitter, C. Winder, H. Hoppe, S. Sariciftci, A. Mura, G. Bongiovanni
Blue emitting self-assembled nano-fibers of para-sexiphenyl grown by Hot Wall Epitaxy

- Phys. Stat. Sol. (a), **201**, 2288-2293 (2004)
 Conference on Photo-Responsive Materials, Kariega, South Africa, Febr. 25-29 (2004)
41. E. Belas, P. Moravec, R. Grill, J. Franc, A. L. Toth, H. Sitter, P. Höschl
Silver diffusion in p-type CdTe and (CdZn)Te near room temperature
 Phys. Stat. Sol. (c) **1**, 929-932 (2004)
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"Ultra compact 2-D photonic crystal add-drop multiplexer"
 ICTON conference proceedings
 43. J.Zarbakhsh, F. Hagmann, S. F. Mingaleev, K. Busch, K. Hingerl
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 44. Javad Zarbakhsh, Kurt Hingerl, Frank Hagmann, Sergei F. Mingaleev, Kurt Busch
"Curvilinear Photonic Crystals"
 Proceedings of the Opt, Soc. Meeting, Rochester, NY.
 45. V.Rinnerbauer, J. Schermer, K. Hingerl
"Polarization demultiplexer with Photonic Crystals"
 Proceedings of European Conference on Optical Communication, ECOC 2004
 Stockholm

Submitted 2004 / in print

1. G. Springholz, T. Schwarzl and W. Heiss, "Mid-infrared Vertical Cavity Surface Emitting Lasers based on the Lead Salt Compounds", in: Mid-infrared Semiconductor Optoelectronics, ed. A. Krier (Springer-Verlag London, in print).
2. A.M. Tyryshkin, S.A. Lyon, W. Jantsch, F. Schäffler, "Spin Manipulation of Free Two-Dimensional Electrons in Si/SiGe Quantum Wells", Phys. Rev. Letters, in print.
3. V. Holy, T.U. Schüllli, R.T. Lechner, G. Springholz, G. Bauer, "Anomalous x-ray diffraction from self-assembled PbSe/PbTe quantum dots", J. Alloys and Compounds, in print.
4. M. Meduna, J. Novak, C.V. Falub, G. Chen, G. Bauer, S. Tsujino, D. Grützmacher, E. Müller, Y. Campidelli, O. Kermarrec, D. Bensahel, N. Schell, "High temperature investigations of Si/SiGe based cascade structures using x-ray scattering methods", J. Phys. D: Appl. Phys., to be published.
5. J. Fürst, H. Pascher, T. Schwarzl, G. Springholz, M. Böberl, G. Bauer, W. Heiss, "Magnetic field tunable circularly polarized emission from midinfrared IV-VI vertical emitting layers", Appl. Phys. Lett., in print.
6. G. Springholz, "Three-dimensional stacking of self-assembled quantum dots in multilayer structures", C. R. Physique, in print.
7. D. Grützmacher, S. Tsujino, C. Falub, A. Borak, L. Diehl, E. Müller, H. Sigg, U. Genser, T. Fromherz, M. Meduna, G. Bauer, J. Faist, O. Kermarrec, "Transport and absorption in strain-compensated Si/Si_{1-x}Ge_x multiple quantum well and cascade structures deposited on Si_{0.5}Ge_{0.5} pseudosubstrates", Materials Science in Semiconductor Processing, in print.
8. R. T. Lechner, G. Springholz, T. U. Schüllli, J. Stangl, T. Schwarzl, G. Bauer, "Strain induced changes in the magnetic phase diagram of metamagnetic heteroepitaxial Eu/Se/PbSe_{1-x}Tex multilayers", Phys. Rev. Lett., in print.

9. T. Schwarzl, M. Böberl, G. Springholz, E. Kaufmann, J. Roither, W. Heiss, J. Fürst, H. Pascher, "*Molecular beam epitaxy of vertical-emitting microcavity lasers for the 6-8 micron spectral range operating in continuous-wave mode*", J. Crystal Growth, in print.
10. J. A. H. Coaquira, V. A. Chitta, N. F. Oliveira Jr., P. H. O. Rappl, A. Y. Ueta, E. Abramof, G. Bauer, "*Electrical Characterization of p-Type Pb_{1-x}EuxTe*", Journal of Superconductivity: Incorporating Novel Magnetism, in print.
11. T. Schwarzl, G. Springholz, M. Böberl, E. Kaufmann, J. Roither, W. Heiss, J. Fürst, H. Pascher, "*Emission properties of 6.7 mm continuous-wave PbSe-based vertical-emitting microcavity lasers operating up to 100 K*", Appl. Phys. Lett., in print.
12. H. Lichtenberger, M. Mühlberger, C. Schelling, F. Schäffler, "*Ordering of self-assembled Si_{0.55}Ge_{0.45} islands on vicinal Si(001) substrates*", J. Crystal Growth, submitted.
13. J. Novák, V. Holý, J. Stangl, T. Fromherz, Z. Zhong, G. Chen, G. Bauer, B. Struth, "*Ge/Si islands in a 3D island crystal studied by x-ray diffraction*", J. Appl. Phys., submitted.
14. T. M. Burbaev, V. A. Kurbatov, M. M. Rzaev, A. O. Pogosov, N. N. Sibel'din, V. A. Tsvetkov, H. Lichtenberger, F. Schäffler, J. P. Leitao, N. A. Sobolev, and M. C. Carmo, "*Morphological transformation of a Germanium layer grown on a Silicon surface by Molecular-Beam Epitaxy at low temperatures*", Phys. Solid State, submitted.
15. J.P. Leitão, A. Fonseca, N.A. Sobolev, M.C. Carmo, N. Franco, A.D. Sequeira, T.M. Burbaev, V.A. Kurbatov, M.M. Rzaev, A.O. Pogosov, N.N. Sibeldin, V.A. Tsvetkov, H. Lichtenberger, and F. Schäffler, "*Low-temperature molecular beam epitaxy of Ge on Si*", Materials Science in Semiconductor Processing, in print.
16. M. Rzaev, F. Schäffler, V. Vdovin and T. Yugova, "*Misfit dislocation nucleation and multiplication in fully strained SiGe/Si heterostructures under thermal annealing*", Materials Science in Semiconductor Processing, in print.
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22. M. Siler, I. Ohlidal, D. Franta, A. Montaigne-Ramil, A. Bonanni, D. Stifter, H. Sitter "*Optical characterization of double layers containing epitaxial ZnSe and ZnTe films* Journ. of Mod. Optics, in print

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Demonstration of g-factor tuning in a SiGe double quantum well device
superlattices and microstructures, submitted
24. H. Przybyłńska, G. Kocher, W. Jantsch, D. As, K. Lischka
Photoconductivity study of Mg and C acceptors in cubic GaN
Proc. ICPS-27, in print
25. K. Schmidegg, H. Sitter, A. Bonanni
In-situ optical analysis of low temperature MOVCD GaN nucleation layer formation
via multiple wavelength ellipsometry
J.Cryst.Growth, in print
26. J. Roither, M. V. Kovalenko, S. Pichler, T. Schwarzl, W. Heiss
Nanocrystal based microcavity light emitting devices operating in the
telecommunication wavelength range
Appl. Phys. Lett.
27. H. Przybyłńska, A. Bonanni, A. Wolos, M. Kiecana, M. Sawicki, T. Dietl, H.
Malissa, C. Simbrunner, M. Wegscheider, H. Sitter, K. Rumpf, P. Granitzer, H.
Krenn, W. Jantsch
Magnetic properties of a new spintronic material – GaN:Fe
Mat. Science Engineering C (ELSEVIER publisher) in print
28. J. Chaloupka, J. Zorbakhsh, K. Hingerl
“Local density of states and modes in circular photonic crystal cavities”
Phys. Rev. B

Presentations

Invited Talks:

1. F. Schäffler, “Nanostructured Semiconductors: Top-Down and Bottom-Up Techniques”, IIR Nano-Seminar, Vienna, 29.09.2004
2. F. Schäffler, “*Growth Instabilities on Si(001):from Kinetic Step Bunching to Perfectly Ordered SiGe Islands*”, MRS Fall Meeting, Boston, USA, 29.11. - 03.12.2004
3. J. Stangl, “*Structural Properties of Semiconductor Nanostructures from X-Ray Scattering*”, DPG-Frühjahrstagung Regensburg, March 8, 2004.
4. J. Stangl, “*Influence of growth parameters on the composition of SiGe islands: an x-ray diffraction study*”, Summerschool “Jaszowiec 2004”, Jaszowiec, Poland, June 3, 2004.
5. J. Stangl, “*High resolution x-ray diffractometry: Determination of strain and composition*”, XTOP Prague, Czech Republic, Sept. 8, 2004.
6. G. Bauer, “*Growth and characterization of semiconductor nanostructures*”, 20th General Conference of the Condensed Matter Division of the European Physical Society (EPS), Prague, July 19-20, 2004.
7. G. Bauer, Z. Zhong, G. Springholz, R. T. Lechner, J. Stangl, T. Schüllli, T. H. Metzger, V. Holy, “*Nanostructure growth and self-assembly*”, ESRF Workshop on Surfaces and Interfaces, Grenoble, Sept. 29 - Oct. 02, 2004.
8. G. Bauer, “*Nanostructure growth and self-assembly*”, ALBA Workshop Universidad Autonoma de Madrid, Nov. 3-4, 2004.

9. H. Sitter, A. Andreev, C. Teichert, G. Hlawacek, T. Haber, D. Smilgies, R. Resel, A. Moutaigne-Ramil, S. Sariciftci, *Organic thin films grown by Hot Wall Epitaxy on inorganic substrates*, XVII Latin American Symposium on Solid State Physics, 06.-09.12.2004, Habana, Cuba
10. W. Jantsch, Z. Wilamowski, *Spin properties of conduction electrons in Si/SiGe quantum wells*, SiGeNET Final Meeting- Research Training Network Contract HPRN-CT-1999-00123, 02.-03.02.2004, University of Linz, Austria
11. W. Jantsch, Z. Wilamowski, *Properties and manipulation of electron spins in low dimensional SiGe structures*, International Workshop Spintronics: Spin injection, Transport and Manipulation, 11.-12.10.2004, Ruhr-Universität Bochum, Germany

Seminar Talks:

1. G. Bauer, "Strukturelle Untersuchungen an Halbleiter-Nanostrukturen", Kolloquiumsvortrag Universität Jena, July 5, 2004.
2. F. Fromherz, P. Rauter, G. Bauer, "SiSiGe cascade structures: structural characterization and optical properties", Kolloquiumsvortrag Universität Prag, May 20-21, 2004.
3. J. Stangl, "Investigation of semiconductor nanostructures by x-ray diffraction techniques", Symposium on the Use of Synchrotron Radiation, Vienna, 15 March 2004.
4. Z. Zhong, "Site-controlled Ge islands grown on the patterned Si substrates", Seminar Talk, Max Planck Institut für Festkörperforschung Stuttgart (Abt. Von Klitzing), Dec. 13, 2004.
5. F. Schäffler, "Si-based Heterostructures"; SiGe-Net project meeting, Linz 02.02.2004
6. F. Schäffler, "Presentation of the NanoScience/Technology Center Linz", Annual Meeting of the Austrian Physical Society, Linz, 28. - 30.10.2004
7. G. Springholz, "Strain relaxation and dislocation formation in strained-layer heteroepitaxy", Forschungszentrum Jülich, Germany, 4.11.2004.
8. G. Springholz, "Surface and Interface Structure in Heteroepitaxial Systems", Montanuniversität Leoben, Austria 26.2.2004.

Conference presentations (talks and posters):

1. H. Lichtenberger, M. Mühlberger, C. Schelling and F. Schäffler, "Ordering of Self-Assembled Si_{0.55}Ge_{0.45} Islands on Vicinal Si(001) Substrates", 13th Int. Conf. on Molecular Beam Epitaxy, Edinburgh, UK, 23. - 27.08.2004
2. G. Pillwein und G. Brunthaler, "Leitwertfluktuationen im Coulomb Blockade Regime von AlGaAs Quantenpunkten", Annual Meeting of the Austrian Physical Society, Linz, 28. - 30.10.2004.
3. H. Lichtenberger, M. Mühlberger, C. Schelling, F. Schäffler, "Ordering of Self-Assembled Si_{0.55}Ge_{0.45} Islands on Vicinal Si(001) Substrates", Annual Meeting of the Austrian Physical Society, Linz, 28. - 30.10.2004
4. G. Pillwein, G. Brunthaler, G. Strasser, "Fabrication and Characterization of lateral quantum dots in GaAs/AlGaAs Heterostructures", Poster, 13th Int. Winterschool on New Developments in Solid State Physics, 15. - 20. Feb. 2004, Mauterndorf, Salzburg.

5. M. Böberl, W. Heiss, T. Schwarzl, and G. Springholz, Z. Wang, K. Reimann, and M. Woerner (Poster), "*Dynamics of lead-salt microcavity lasers after femtosecond optical excitation*", 13th International Winterschool on New Developments in Solid State Physics: "Low-Dimensional Systems", Mauterndorf, Austria, February 15 – February 20, 2004.
6. E. Kaufmann, W. Heiss, G. Springholz, M. Böberl, T. Schwarzl, M. Yano, I. Makabe, K. Koike, (Poster), "*Continuous-wave midinfrared photoluminescence of IV-VI and IV-VI/II-VI heterostructures*", 13th International Winterschool on New Developments in Solid State Physics: "Low-Dimensional Systems", Mauterndorf, Austria, February 15 – February 20, 2004
7. R. T. Lechner, T. U. Schuelli, V. Holy, G. Springholz, J. Stangl, A. Raab, T. H. Metzger, G. Bauer (Talk), "*Fabrication and characterization of three dimensional ordered quantum dot lattices using self assembled epitaxy*", Spring Meeting of the Materials Research Society, San Francisco, USA, 12.4.-16.4.2004.
8. R. T. Lechner, T. U. Schuelli, S. Dhesi, P. Bencok, J. Stangl, G. Springholz and G. Bauer (Talk), "*Laterally ordered magnetic EuSe quantum dots*", Spring Meeting of the Materials Research Society, San Francisco, USA, 12.4.-16.4.2004.
9. M. Böberl, T. Schwarzl, G. Springholz und W. Heiss, J. Fürst, H. Pascher (Talk), Bleisalzverbindungen für optische Bauelemente im mittleren Infraroten, Infrarot-Kolloquium, Feiburg, Germany, 20-21.4.2004.
10. K. Rumpf, P. Granitzer, S. Janecek, G. Springholz, H. Krenn, "*Ideal and real behaviour of the magnetic phase transitions of low-dimensional antiferromagnetic EuTe/PbTe-superlattices*", Joint European Magnetic Symposia JEMS'04, Dresden, Germany, 05-10, 2004.
11. K. Rumpf, P. Granitzer, S. Janecek, G. Springholz, H. Krenn, "*Magnetic Phase Diagram of low-dimensional EuTe/PbTe-Multi-quantum Wells Measured by SQUID-magnetometry*", 8th Int. Conf. on Nanometer-Scale Science and Technology, Venice, Italy, 28.6.-2.7.2004.
12. T. Schwarzl, J. Fürst, M. Böberl, H. Pascher, G. Springholz, W. Heiss (Talk), "*Continuous-wave emission from vertical-cavity surface-emitting lasers at long wavelengths of 8 microns*", 6th International Conference on Mid-Infrared Optoelectronic Materials and Devices, 28.6-1.7.2004, St. Petersburg, Russia.
13. E. Kaufmann, W. Heiss, G. Springholz, M. Böberl, T. Schwarzl, M. Yano, I. Makabe, K. Koike (Poster), "*Continuous-wave light emission from PbTe based heterostructures with CdTe or PbEuTe barriers*", 6th International Conference on Mid-Infrared Optoelectronic Materials and Devices, 28.6-1.7.2004, St. Petersburg, Russia.
14. E. Baumgartner, T. Schwarzl, G. Springholz, W. Heiss (Poster), "*Omnidirectional laser-quality Bragg mirrors with broad stop bands in the mid-infrared*", 6th International Conference on Mid-Infrared Optoelectronic Materials and Devices, 28.6-1.7.2004, St. Petersburg, Russia.
15. M. Simma, T. Fromherz, G. Springholz and G. Bauer (Poster), "*Mid-infrared photocurrent spectroscopy on self-organized PbSe quantum dots*", 6th International Conference on Mid-Infrared Optoelectronic Materials and Devices, 28.6-1.7.2004, St. Petersburg, Russia.
16. G. Springholz, D. Lugovy, R. T. Lechner, A. Raab, L. Abtin, V. Holy, G. Bauer (Talk), "*Size effects and shape transitions in self-organized ordering of PbSe/PbEuTe quantum dot superlattices*", 14th International Conference on Crystal Growth and 12th International Conference on Vapor Growth and Epitaxy, 9.-13.8.2004, Grenoble, France.

17. R Kirchschlager, W. Heiss, R. T. Lechner, G. Bauer, G. Springholz, "*Hysteresis loops of the energy band gap and effective g-factor up to 18000 for metamagnetic EuSe epilayers*", 27th International Conference on the Physics of Semiconductors, 26.7.-31.7.2004, Flagstaff, USA.
18. G. Springholz, T. Schwarzl, E. Baumgartner, W. Heiss (Talk), "Molecular beam epitaxy of wide/narrow band gap semiconductors for mid-infrared broad-band Bragg mirrors and high finesse microcavities", 13th International Conference on Molecular Beam Epitaxy, 22.-27.8.2004, Edinburgh, UK.
19. R. T. Lechner, G. Springholz, T. U. Schüllli, L. Abtin, H. Krenn, and G. Bauer (Talk), "*In and ex situ characterisation of magnetic EuSe/PbSe_{1-x}Te_x superlattices grown by molecular beam epitaxy*", 13th International Conference on Molecular Beam Epitaxy, 22.-27.8.2004, Edinburgh, UK.
20. D. Lugovyy, G. Springholz, P. Simicek and V. Holy (Poster), "*Monte Carlo simulation and growth of vertical and lateral ordering in self-assembled PbSe quantum dot superlattices*", 13th International Conference on Molecular Beam Epitaxy, 22.-27.8.2004, Edinburgh, UK.
21. T. Schwarzl, J. Fürst, M. Böberl, H. Pascher, G. Springholz, W. Heiss (Talk), "*MBE growth of vertical-emitting microcavity lasers for the 6 - 8 micron spectral range operating in continuous-wave mode*", 13th International Conference on Molecular Beam Epitaxy, 22.-27.8.2004, Edinburgh, UK.
22. L. Abtin, A. Raab, G. Springholz and V. Holy (Talk), "*Surface evolution and shape transitions of self-assembled PbSe quantum dots during overgrowth*", 13th International Conference on Molecular Beam Epitaxy, 22.-27.8.2004, Edinburgh, UK.
23. G. Springholz and K. Wiesauer (Talk), "Quasi-Periodic Nanopatterning of Strain-Relaxed Heteroepitaxial Layers by Misfit Dislocation Arrays as Demonstrated for PbTe on PbSe (001)", Fall Meeting of the Materials Research Society, 29.11.-3.12.2004, Boston, USA.
24. G. Springholz, T. Schwarzl, J. Fürst, M. Böberl, H. Pascher, W. Heiss (Talk), "*Vertical-Cavity Surface-Emitting Lasers with cw-Emission at Long Wavelengths of 6-8 Microns*", Fall Meeting of the Materials Research Society, 29.11.-3.12.2004, Boston, USA.
25. S. Tsujino, A. Borak, C. V. Falub, E. Müller, L. Diehl, M. Scheinert, H. Sigg, D. Grützmacher, T. Fromherz, U. Gennser, Y. Campidelli, O. Kermarrec, D. Bensahel, J. Faist, "*Quantum transport of s quasi-two-dimensional hole gas in strain compensated SiGe wells and superlattices*", 13th International Winterschool on New Developments in Solid State Physics, Low-Dimensional Systems, Mauterndorf, Austria, 15-20 Feb. 2004.
26. D. Grützmacher, C. Falub, S. Tsujino, A. Borak, M. Scheinert, E. Müller, H. Sigg, M. Meduna, T. Fromherz, G. Bauer, "*Achievements and challenges on the road to a SiGe quantum cascade laser*", 12th International Symposium Nanostructures: Physics and Technology St Petersburg, Russia, 21-25 June 2004
27. T. Fromherz, M. Grydlik, P. Rauter, M. Meduna, C. Falub, L. Diehl, G. Dehlinger, H. Sigg, D. Grützmacher, H. Schneider, G. Bauer, "*Si/SiGe QWIPs for voltage-tuneable, resonator-enhanced, two-colour detection in the MIR*", 3rd International Workshop on Quantum Well Infrared Photodetectors (QWIP 2004), Kananaskis, Alberta, Canada, August 7-13, 2004.
28. A. Andreev, F. Quochi, H. Hope, H. Sitter, S. Sariciftci, A. Mura, G. Bongiovanni, "*Blue emitting self-assembled nanocrystals of para-sexiphenyl grown by Hot Wall*

- Epitaxy*, 5th Int.Conf. on Low Dimensional Structures and Devices, 12.-17.12. 2004, Cancun – Mexico
29. M. Oehzelt, T. Haber, A. Andreev, H. Sitter, D. Smilgies, J. Kecks, R. Resel, *Epitaxial growth of sexiphenyl on KCl(100)-performance of reciprocal space maps*, 7th Biennial Conference on High-Resolution X-ray Diffraction, 07.-10.09.2004, Prag, Czech Republic
 30. R. Resel, O. Lengyel, T. Haber, M. Oehzelt, S. Mülleger, A. Winkler, B. Winter, G. Koller, M. Ramsey, G. Hlawacek, C. Teichert, A. Andreev, H. Sitter, *Formation and Structure of oligo-phenyl thin films for organic opto-electronics*, Workshop on Compound Semiconductor Devices and Integrated Circuits, 17.-19.05.2004, Smolenice, Slovakia
 31. T. Haber, M. Oehzelt, D. Smilgies, W. Grogger, B. Schaffer, H. Sitter, A. Andreev, R. Resel, *Epitaxial Growth of sexiphenyl Thin Films on KCl(100)*, International Conference on Surface Science, 28.06.-02.07.2004, Venice, Italy
 32. R. Resel, M. Ramsey, G. Koller, C. Teichert, A. Andreev, H. Sitter, *Formation of Sexiphenyl Nanofibers by Epitaxial Growth on Dielectric Substrates*, 324th WE-Heraeus Seminar, Exploring the nanostructures of Soft Materials with X-rays, 10-12.05.2004, Bad Honnef, Germany
 33. F. Quochi, A. Andreev, F. Cordella, R. Orru, A. Mura, G. Bongiovanni, H. Hope, H. Sitter, S. Sariciftci, *Low-threshold blue laser in nanocrystals of para-sexiphenyl grown by Hot-Wall Epitaxy*, International Conference on Synthetic Metals, 28.06.-2.07.2004, Wollongang, Australia
 34. K. Schmidegg, A. Kharchenko, A. Bonanni, K. Lischka, H. Sitter, J. Bethke, *In-Situ determination of growth-rate and concentration of ternary MOCVD nitrides via multiple wave-length ellipsometry*, 12th International Conference on Metal Organic Vapor Phase Epitaxy, 30.05.-04.06.2004, Lahaina, Maui, Hawaii, USA
 35. A. Bonanni, K. Schmidegg, A. Montaigne-Ramil, A. Kharchenko, J. Bethke, K. Lischka, H. Sitter, *On-line growth control of MOCVD deposited GaN and related ternary compounds via spectroscopic ellipsometry and x-ray diffraction*, Conference on Photo-Responsive Materials, 25.-29.02.2004, Kariega, South Africa
 36. A. Andreev, F. Quochi, H. Hope, H. Sitter, S. Sariciftci, A. Mura, G. Bongiovanni, *Blue emitting self-assembled nanocrystals of para-sexiphenyl grown by Hot Wall Epitaxy*, Conference on Photo-Responsive Materials, 25.-29.02.2004, Kariega, South Africa
 37. A. Andreev, H. Hope, T. Haber, D. Smilgies, H. Sitter, S. Sariciftci, R. Resel, *Highly Oriented Organic Semiconductor Thin Films Grown by Hot Wall Epitaxy on Different Substrates*, 5th International Conference "Electronic Processes in Organic Materials" (ICEPOM-5), 24.-29.05.2004, Kiew, Ukraine
 38. A. Andreev, F. Quochi, T. Haber, H. Hope, D. Smilgies, H. Sitter, S. Sariciftci, R. Resel, A. Mura, G. Bongiovanni, *Morphology and growth kinetics of organic thin films deposited by Hot Wall Epitaxy on KCl and NaCl substrates*, 14th International Conference on Crystal Growth, 09.-13.08.2004, Grenoble, France
 39. A. Andreev, F. Quochi, H. Hope, H. Sitter, S. Sariciftci, A. Mura, G. Bongiovanni, *Blue emitting self-assembled nanocrystals of para-sexiphenyl grown by Hot Wall Epitaxy*, 5th Int.Conf. on Low Dimensional Structures and Devices, 12.-17.12. 2004, Cancun – Mexico
 40. M. Oehzelt, T. Haber, A. Andreev, H. Sitter, D. Smilgies, J. Kecks, R. Resel, *Epitaxial growth of sexiphenyl on KCl(100)-performance of reciprocal space maps*,

- 7th Biennial Conference on High-Resolution X-ray Diffraction, 07.-10.09.2004, Prag, Czech Republic
41. R. Resel, O. Lengyel, T. Haber, M. Oehzelt, S. Mülleger, A. Winkler, B. Winter, G. Koller, M. Ramsey, G. Hlawacek, C. Teichert, A. Andreev, H. Sitter, *Formation and Structure of oligo-phenyl thin films for organic opto-electronics*, Workshop on Compound Semiconductor Devices and Integrated Circuits, 17.-19.05.2004, Smolenice, Slovakia
 42. T. Haber, M. Oehzelt, D. Smilgies, W. Grogger, B. Schaffer, H. Sitter, A. Andreev, R. Resel, *Epitaxial Growth of sexiphenyl Thin Films on KCl(100)*, International Conference on Surface Science, 28.06.-02.07.2004, Venice, Italy
 43. R. Resel, M. Ramsey, G. Koller, C. Teichert, A. Andreev, H. Sitter, *Formation of Sexiphenyl Nanofibers by Epitaxial Growth on Dielectric Substrates*, 324th WE-Heraeus Seminar, Exploring the nanostructures of Soft Materials with X-rays, 10-12.05.2004, Bad Honnef, Germany
 44. F. Quochi, A. Andreev, F. Cordella, R. Orru, A. Mura, G. Bongiovanni, H. Hope, H. Sitter, S. Sariciftci, *Low-threshold blue lasing in nanocrystals of para-sexiphenyl grown by Hot-Wall Epitaxy*, International Conference on Synthetic Metals, 28.06.-2.07.2004, Wollongang, Australia
 45. K. Schmidegg, A. Kharchenko, A. Bonanni, K. Lischka, H. Sitter, J. Bethke, *In-Situ determination of growth-rate and concentration of ternary MOCVD nitrides via multiple wave-length ellipsometry*, 12th International Conference on Metal Organic Vapor Phase Epitaxy, 30.05.-04.06.2004, Lahaina, Maui, Hawaii, USA
 46. A. Bonanni, K. Schmidegg, A. Montaigne-Ramil, A. Kharchenko, J. Bethke, K. Lischka, H. Sitter, *On-line growth control of MOCVD deposited GaN and related ternary compounds via spectroscopic ellipsometry and x-ray diffraction*, Conference on Photo-Responsive Materials, 25.-29.02.2004, Kariega, South Africa
 47. A. Andreev, F. Quochi, H. Hope, H. Sitter, S. Sariciftci, A. Mura, G. Bongiovanni, *Blue emitting self-assembled nanocrystals of para-sexiphenyl grown by Hot Wall Epitaxy*, Conference on Photo-Responsive Materials, 25.-29.02.2004, Kariega, South Africa
 48. A. Andreev, H. Hope, T. Haber, D. Smilgies, H. Sitter, S. Sariciftci, R. Resel, *Highly Oriented Organic Semiconductor Thin Films Grown by Hot Wall Epitaxy on Different Substrates*, 5th International Conference "Electronic Processes in Organic Materials" (ICEPOM-5), 24.-29.05.2004, Kiew, Ukraine
 49. A. Andreev, F. Quochi, T. Haber, H. Hope, D. Smilgies, H. Sitter, S. Sariciftci, R. Resel, A. Mura, G. Bongiovanni, *Morphology and growth kinetics of organic thin films deposited by Hot Wall Epitaxy on KCl and NaCl substrates*, 14th International Conference on Crystal Growth, 09.-13.08.2004, Grenoble, France
 50. H. Malissa, W. Jantsch, M. Muehlberger, F. Schaeffler, Z. Wilamowski, *Bychkov-Rasba Effect in low dimensional SiGe structures*, 26.-30.07.2004, 27th Int. Conference on the Physics of Semiconductors, Flagstaff Arizona, USA
 51. Z. Wilamowski, H. Malissa, W. Jantsch, *Cyclotron resonance revisited: the effect of carrier heating*, 26.-30.07.2004, 27th Int. Conference on the Physics of Semiconductors, Flagstaff Arizona, USA
 52. H. Przybylinska, R. Buczko, G. Kocher, W. Jantsch, D. As, K. Lischka, *Photoconductivity study of Mg and C acceptors in cubic GaN*, 26.-30.07.2004, 27th Int. Conference on the Physics of Semiconductors, Flagstaff Arizona, USA
 53. H. Przybylinska, G. Kocher, W. Jantsch, D. As, K. Lischka, R. Buczko, *Mg and C acceptors in cubic GaN studied by photothermal ionization spectroscopy*, 28.-

- 30.09.2004, 54. Jahrestagung der Österreichischen Physikalischen Gesellschaft, Linz, Austria
54. H. Malissa, Z. Wilamowski, W. Jantsch, *Cyclotron resonance in high mobility Si: the effect of carrier heating*, 28.-30.09.2004, 54. Jahrestagung der Österreichischen Physikalischen Gesellschaft, Linz, Austria
 55. O. M. Fedorych, Z. Wilamowski, W. Jantsch, J. Sadowski: *Electrically detected magnetic resonance*, 28.05.-04.06.2004, XXXIII International School on the Physics of Semiconducting , Compounds, Jaszowiec, Poland
 56. A. Andreev, T. Haber, D. M. Smilgies, L. Valek, R. Resel, H. Hope, H. Sitter, S. Sariciftci, *Morphology and growth kinetics of organic thin films deposited by Hot Wall Epitaxy on different substrates*, poster at the Jahrestagung der ÖPG, 01.06.2004, Linz, Austria
 57. A. Bonanni, K. Schmidegg, H. Sitter, *In-situ multiple wave-length ellipsometry: virtual-interface approximation model for simultaneous determination of growth-rate and composition in MOCVD nitrides*, poster at the 14th International Conference on Crystal Growth, 09.-13.08.2004, Grenoble, France
 58. J. Liday, I. Hotovy, H. Sitter, K. Schmidegg, A. Bonanni, P. Vogrincic, *NiO-based contacts for blue emitting diodes*, poster at the International Conference on Inorganic New Materials, September 2004, Antwerp, Belgium
 59. A. Andreev, F. Quochi, T. Haber, H. Hope, D. Smilgies, H. Sitter, S. Sariciftci, R. Resel, A. Mura, G. Bongiovanni, *Epitaxial Growth of Blue Emitting Organic Nano-Wires*, poster at the 13th International Conference on Molecular Beam Epitaxy, 22.-27.08.2004, Edingburgh, England
 60. A. Bonanni, D. Stifter, K. Hingerl, H. Sitter, K. Schmidegg, *In-situ multipel wavelength ellipsometry for real time process characterization of nitride MOCVD*, 27th International Conference on the Physics of Semiconductors (ICPS27), July 2004, Flagstaff
 61. K. Schmidegg, H. Sitter, K. Hingerl, A. Bonanni, *In-Situ optical analysis of low-temperature MOCVD GaN nucleation layer formation via multiple-wavelength ellipsometry*, 12th International Conference on Metal Organic Chemical Vapor Deposition (ICMOVPE12), June 2004, Lahaina (Hawaii)
 62. W. Heiss, J. Roither, K. Hingerl, S. Andreeva, *Waveguiding effects in layer by layer deposited films of chemically synthesized CdTe nanocrystals*, E-MRS 2004 Spring Meeting, 24.-28.05.2004, Strasbourg, France
 63. J. Roither, W. Heiss, V. Talapin, N. Gaponik, A. Eychmüller, *Highly directional emission from colloiddally synthesized nanocrystals in vertical cavities with small mode spacing*, E-MRS 2004 Spring Meeting, 24.-28.05.2004, Strasbourg, France
 64. Veronika Rinnerbauer: European Conference of Optical Communication, 8. 9. 2004, Stockholm, *"Polarization Splitting realized with Photonic Crystals"*
 65. Javad Zarbakhsh: Bad Honnef, 28. 4. 2004, Workshop on Photonic Crystals, poster presented by *"Arbitrary angle waveguiding applications of two-dimensional curvilinear-lattice photonic crystals"*
 66. K. Hingerl, *"Reflectance modulated spectroscopy of cubic semiconductors under stress: a tool for piezo optical characterization"*, A. L. Martinez, L. F. Martinez, R. Balderas Navarro, ICPS, Flagstaff, Arizona, 2 posters, 30. 7. 2004

67. R. Buczko, G. Kocher-Oberlehner, W. Jantsch, D. As, K. Lischka, "Photoconductivity study of Mg and C acceptors in cubic GaN" H. Przybylinska, ICPS, Flagstaff, Arizona, 2 posters, 30. 7. 2004

Patents

1. K. Hingerl, R. Holly, T. Glinsner, H. Seyringer, "Process to produce a light coupling device between a glass fibre and a waveguide of a high refractive index" ("Verfahren zum Herstellen einer Lichtkopplungseinrichtung zwischen einer Glasfaser und einem Lichtwellenleiter höheren Brechungsindex"), "Prägeverfahren", 33 049 A Österreich; 33 049 2004 3C 1550/2004.
2. K. Hingerl, "Process to produce a light coupling device between a glass fibre and a waveguide of a high refractive index" ("Verfahren zum Herstellen einer Lichtkopplungseinrichtung zwischen einer Glasfaser und einem Lichtwellenleiter höheren Brechungsindex"), "Einkopplung Glasfaser", 33 215 A Österreich; 33 215 2004 3C 1551/2004.
3. K Hingerl J Zarbakhsh, "Photonic crystal structure" ("Photonischer Kristallstruktur"), Photonic crystal structure P911 DE Deutschland 18064.3-P911 2004 10 2004 054 505.7.

Diploma Theses

Finished in 2004:

1. Eugen Wintersberger "Röntgenbeugung und -reflexion an Si/SiGe/GaAs Hetero- und Nanostrukturen"
2. Mathias Simma "Photoleitungsuntersuchungen an Quantenpunkten"
3. Stefan Janecek "Simulation of the magnetic order of few-monolayer-(111)-EuTe in oblique magnetic fields"
4. Benjamin Lindner "Metall-Isolator-Übergang in zweidimensionalen Siliziumstrukturen"

Current works:

1. Martyna Grydlik "Si/SiGe resonant cavity enhanced, tunable mid-infrared quantum well detectors."
2. Thomas Hörmann "Modellrechnungen und Auswertungen zum Metall-Isolator-Übergang in zweidimensionalen Halbleiterstrukturen"
3. Bernhard Mandl "Au-free growth and characterization of semiconductor nanostructures"
4. Anzengruber Johannes "Optische Resonatoren für die Molekülspektroskopie"
5. Isfahani Farnaz "Fabrication of stamp for nanoimprint lithography using reactive ion etching – Study and optimization of the process parameters"

6. Kirchschrager Raimund
“Magnetooptische Eigenschaften von Eu-Chalcogeniden”
7. Pichler Stefan
“Nanokristall basierende elektrooptische Bauteile”
8. Matthias Wegscheider
“Growth and optical characterization of nitride-based diluted magnetic semiconductors”

Doctor's Theses

Finished in 2004:

1. Mag. Rainer T. Lechner
“Herstellung und Charakterisierung von EuSe- Nanostrukturen”

Current works:

1. M.Sc. Laurel Abtin
“STM investigation on self-assembled IV-VI semiconductor nanostructures”
2. Dipl.Ing. Thomas Berer
“Electronic and spin properties of Si/SiGe heterostructures”
3. Dipl.Ing. Daniel Gruber
“Si/SiGe Heterostructure Devices for Spintronic Applications”
4. Dipl. Phys. Anke Hesse
“Strukturelle Untersuchungen an Halbleiternanostrukturen”
5. Dipl.Ing. Herbert Lichtenberger
“Kinetic and strain-induced self-organization of SiGe heterostructures”
6. M.Sc. Dmytro Lugovyy
“Investigation of vertical and lateral ordering in self-organized PbSe quantum dot superlattices”
7. Mag. Jiri Novak
“Untersuchung der strukturellen Eigenschaften von Quantenpunkten”
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