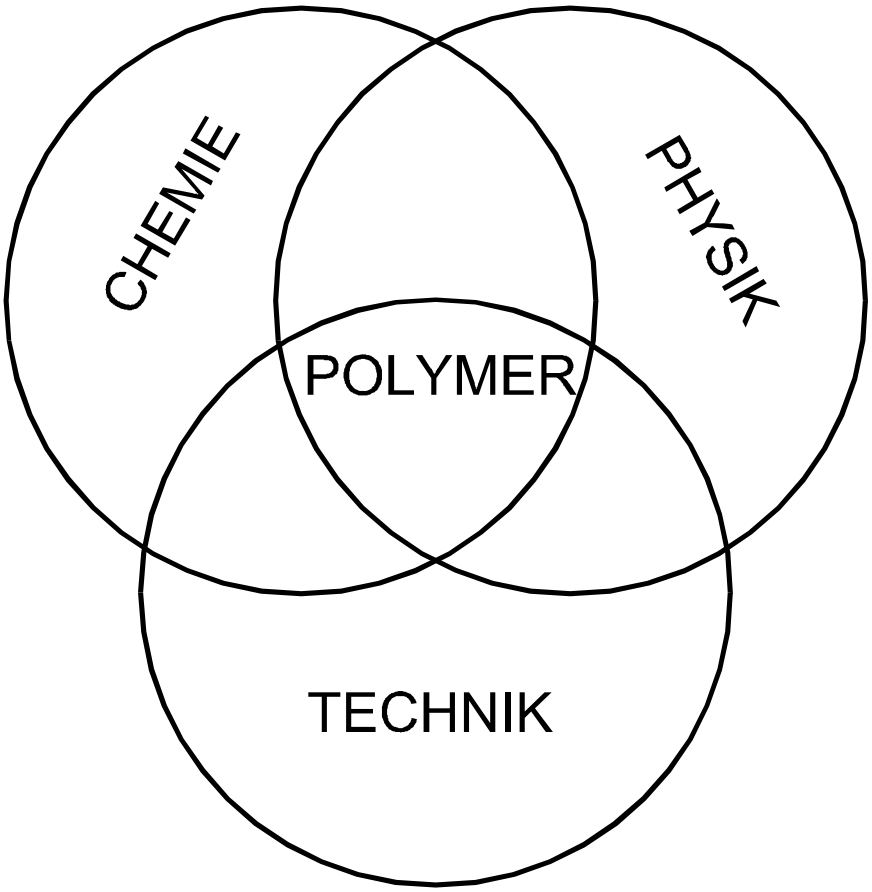
Berlin-Brandenburgischer Verband
für Polymerforschung e.V.



Annual Report

Bericht über die wissenschaftlichen Aktivitäten

2002

Content

Preface

The 16th Annual Report of the BVP comes in unchanged design, with the essential parts being in English. This shall facilitate its use by our foreign partners, as a source of information about the polymer research scenery in Berlin and its neighbourhood. In order to avoid confusion, the names of the participating institutions will be cited in their german version only.
This report can also be found at the home page of the BVP (see next page).

The principal purpose of the report is to reveal the scientific activities of the members and their graduate and undergraduate students. This is done, as every year, in a rather straigt forward and simple manner.

In 2002, the BVP mourns the decease of its corresponding members Prof. G. Kanig and Prof. B. Vollmert.
The regular members H. Feuerberg and D. Paul have left the BVP because of their retirement. U. Scherf has moved to the university of Wuppertal.

We hope this report may find your interest. It may also stimulate the desire to cooperate with the members.

Vorwort

Der 16. Jahresbericht des BVP erscheint in unveränderter Aufmachung, wie im Vorjahr sind die wichtigsten Teile in englischer Sprache. Damit soll der Bericht auch für unsere ausländischen Partner als Informationsquelle über die Polymerforschung in der Berlin-Brandenburgischen Region nutzbar sein.

Wie in den Vorjahren wird dieser Bericht auf der umseitig genannten Homepage des BVP im Internet (WWW) zu finden sein.

Wie immer ist die Dokumentation der wissenschaftlichen Aktivitäten der Mitglieder und natürlich auch ihrer Diplomanden und Doktoranden die vorrangige Aufgabe dieses Jahresberichtes. Dies erfolgt, auch wie immer, in vergleichsweise spartanischer Einfachheit.

Der BVP trauert um seine beiden im Jahr 2002 verstorbenen korrespondierenden Mitglieder, die Professoren G. Kanig und B. Vollmert.
Im Berichtsjahr sind die ordentlichen Mitglieder H. Feuerberg und D. Paul aus Altersgründen und U. Scherf wegen seiner Berufung nach Wuppertal ausgetreten; der BVP dankt ihnen für ihr Engagement.

Möge dieser Bericht bei Vielen das Interesse an der Arbeit des Verbandes wecken und insbesondere Außenstehende zur Zusammenarbeit mit den Mitgliedern des Verbandes veranlassen.

M. Hennecke, BAM

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http://pmm08.physik.hu-berlin.de/bvp/bvphome.htm

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Research Interests of the Regular Members of BVP

Prof. Dr. Markus Antonietti

Max-Planck-Institut für Kolloid- und Grenzflächenforschung

The scientific work covers different aspects within the area of the synthesis, structure and characterisation of colloids and polymers. A rough division in four topics can be made:

Polyelectrolytes
Investigations of model systems: Static and dynamic light scattering, rheology; PE mixtures; alternative PE-architectures; Polyelectrolyte-surfactant complexes

Heterophase polymerization
Micro-, mini-, and (macro) emulsion polymerization, inverse precipitation polymerizations; complex surface functionalization of latexes; hierarchical structures from latexes, polymer dispersions as drug carriers and diagnostics

Amphiphilic polymers
surface stabilization, micellation, stabilization of metal and semiconductor colloids, new synthetic toutes amphiphilic block copolymers, doulbe hydrophilic blocks and crystallization control

Colloidal superstructures
Aggregation of different colloid types, structure analysis of colloidal superstructures by means of light scattering, X-ray diffraction and electron microscopy, hierarchical materials.

Prof. Dr. Ludwig Brehmer

University of Potsdam
Condensed Matter Physics, Institute of Physics

The main topic of our research is the **„Solid State Physics of Functional Nano-Structured Organic Layers and Interfaces“** with the main parts:

- Molecular structuralised and functionalised supramolecular architectures
- Design and molecular modelling of supramolecular structures and materials
- Fabrication and characterisation of ultra thin layers on molecular level
- Construction, processes and interaction of supramolecular structures
- Electrical properties: charge transport, dc and ac measurements, dipole relaxations (impedance spectroscopy)
- Optical and NLO properties: UV-Vis and IR spectroscopy, ellipsometry, optical constants, SHG
- Nano-optics
- Separation processes (membranes)
- Theory of charge transport in disordered structures
- Application of specific interactions for microsensorics (pyroelectricity, resistive humidity measurements, optical detection of metal ions)
- Molecular electronics (molecular switches, rectifier, interface)

Equipment for research and development:

- Fabrication of ordered film architectures:
- Organic molecular beam deposition system (OMBD) (LEED, RHEED, MS, Auger spectroscopy, UHV-STM)
- Langmuir-Blodgett laboratory (clean room), (BAM, Kelvin technique, ADSA technique)
- spin-coated films, dipped films, self-assembled films
- molecular modelling

- Structure characterization of ordered films:
- X-ray diffractometry, UV-VIS and IR spectroscopy, microscopy (polarization, fluorescence), AFM/STM, ellipsometry
- interface rheology

- Preparation of substrates and metalization:
- evaporation and sputter devices, bonding machine, scribing machine, electron beam exposure

- AFM/STM laboratory:
- atomic force microscope TMX2000 (Topometrix)
- atomic force microscope AUTOPROBE CP (Park Scientific)
- atomic force microscope UNIVERSAL (Park Scientific)
- conducting-probe atomic force microscope CSM
- Electrical properties:
- ac, dc, TSC, TSDC, pyroelectrical measuring station, impedance spectroscopy, CVC, Kelvin technique)

- Optical properties:
- ellipsometry, grid coupler (wave guiding), plasmon microscopy, electroluminescence, NLO-ps stations, m-line station, thermoluminescence

- Thermal analysis: DSC, TGA

- Utilization of large systems (DESY II, HASYLAB)
- NEXAFS, synchrotron radiation, UPS

- Sensor laboratory:
- gas mixing technique
- humidity chamber

Selected research main topics

- Nano-photo science: optically induced switching processes (NLO, cascading)
- OLED: polarization, nanostructuring
- OFET: Organic Field Effect Transistors
- electro-optical effects
- charge transport in unordered systems (MC simulation, stochastic transport)
- membranes: modular ultrathin separation phases
- microsensorics (humidity, IR)
- molecular electronics (switching, interface)

Prof. Dr. Wolfgang Bruns (retired)

Technical University Berlin
Professor of Macromolecular and Theoretical Chemistry

The solution of those problems was pursued that could not be finished, while the author was in the professional life. The main subject is the determination of the dependence of the architecture of polymer coils in solution on the concentration.

Dr. Ulrich Buller

Fraunhofer-Institut für Angewandte Polymerforschung

The research and development of the Fraunhofer-Institute for Applied Polymer Research is divided into 4 research divisions:

Research division 1 »Natural polymers«
(compare research areas Dr. Hans-Peter Fink)

Research division 2 »Functional Polymer Systems«
(Dr. Ulrich Buller)

The research division »Functional Polymer Systems« works in the following fields:

Physically active polymers
The department deals with the preparation, characterization and application of functional polymer systems. We improve sensor and transducer properties in new polymer electrets to detect pressure distribution, vibrations and radiation. New dye doped polymer systems can be used as spectral converters, in laser technology, as fluorescence sensors and as light – activated biocidal coatings.

Organic light-emitting diodes and displays, organic field effect transistors
The development of low-content displays with polymer materials is carried out in this group. The group offers a complete range of research and development services from synthesis of new polymer materials to the construction of prototype devices combining a state-of-the-art equipment and a comprehensive know-how. This is a strategy to identify ways from the research to an industrial application. An additional field is the construction of organic field effect transistors with new materials for a polymer electronic.

Modification and Characterization of Surfaces
The group „Surfaces“ modifies chemical and physical properties of polymer surfaces, prepares thin organic functional layers and analyzes the surfaces and thin layers. Various plasma processes and VUV photochemical processes as well as gas phase and liquid phase reactions of the surfaces are used for surface modification on equipment ranging from the laboratory scale up to the pilot scale.

Polymer Photo Chemistry
Fields of research are the development of optical and photosensitive functionalized materials and the development of processes for the light-induced formation of devices. Topics are laser photochemistry, holography, photochemical modification of interfaces as well as photochemistry and spectroscopy with polarized light. Anisotropic and supramolecular systems will be developed using self-organization processes, molecular photoreactions, light-induced orientation and diffusion processes for applications in the optical data storage, the formation of optical components for the light modulation such as holographic volume gratings and surface relief gratings, in the sensoric, for photoalignment of liquid crystals and printing technology.

Chromogenic polymers
The department chromogenic polymers develops novel polymeric systems whose optical properties are controllable by external stimuli like temperature, electric field, pressure and light. Hereby, transparency and/or color of foils, plastics, gels and liquid crystalls can be adjusted according to the requirements of specific applications

Research division 3 »Synthesis and Polymer Technology«
(compare research areas Dr. Gerald Rafler)

Research division 4 »Water-born Polymer Systems«
(compare research areas Dr. Werner Jaeger, Professor André Laschewsky)

Prof. Dr. G.H. Findenegg

Technische Universität Berlin, Institut für Chemie
Physical Chemistry of Colloids and Interfaces

We are studying the structure, dynamics and selected properties of *complex liquids* (aqueous and nonaqueous systems of amphiphilic block copolymers, surfactants and polyelectrolytes) in bulk, in thin films, and at interfaces. We are also interested in the role of surfactants and block copolymers as structure-directing agents to produce mesoscopically ordered inorganic-organic composites, and in the structure and phase behavior of pure substances and mixtures in nanopores.

Surfactant and polymer systems

- The structure and dynamics of micellar aggregates of block copolymers and surfactants in solution, and of lyotropic phases of these amphiphiles, is studied by scattering techniques (SLS, DLS, SAXS, SANS, and NSE spectroscopy). The results are correlated with the macroscopic properties of these systems (with T. Hellweg).
- Adsorption layers and surface aggregates of amphiphilic molecules adsorbed from aqueous solutions at the free surface and at solid/liquid interfaces are investigated by X-ray and neutron reflectometry (XR and NR), and grazing-incidence small-angle scattering (GISANS). The interface of water against hydrophobic polymer surfaces and the formation of nanobubbles at such interfaces is studied by NR, GISANS and atomic force microscopy (AFM) (with R. Steitz).
- The structure of polyelectrolyte multilayers and the effect of polyelectrolytes on thin soap films is studied by a combination of different techniques (R. v.Klitzing).

Confinement effects in nanopores

Mesoporous silica materials with hexagonally ordered arrays of cylindrical pores of uniform size (MCM-41 and SBA-15) are synthesized by sol-gel processes, using surfactants and block copolymers as templates, and the pore walls can be chemically functionalized. These materials are used to study confinement effects on the phase behavior and the mesoscopic structure of pure substances and binary mixtures:

- Freezing and melting of water and organic substances (DSC); pore condensation of vapors (gravimetric and volumetric adsorption studies in a wide temperature and pressure range).
- Adsorption and surface aggregation of surfactants (adsorption calorimetry).
- Microphase separation of liquid mixtures in porous solids (SANS, NSE).

Further information: http://www.tu-berlin.de/~insi/ag_findenegg/

http://www.tu-berlin.de/~sfb448/

Dr. habil. Hans-Peter Fink

Fraunhofer-Institut für Angewandte Polymerforschung
Natural Polymer Division

The research work of the division is centred on cellulose and starch as the most abundant natural polymers. Investigations are performed in a wide range covering the extraction of the raw materials, characterization and modifications, the industrial conversion, as well as the development of new processing routes and products. R&D projects are dealing with environmentally friendly routes for man-made cellulosic fibres and films, specialty chemicals based on cellulose and starch, the development of cellulose fibre reinforced composites, as well as non-food starch products. As a highlight-example, based on the lyocell-technology, a pollution free processing route for cellulose blown films similar to polyolefin films has been developed recently. Applied research is complemented by basic investigations with regard to the structure formation of bacterial cellulose, the regioselective derivatization of polysaccharides, and the structure of these biopolymers in solution, among others. These investigations as well as solid state structure and property relationships are helpful in finding out capabilities and limitations of the natural polymers.

There are several laboratories and large scale equipments for chemical modifications, a wet spinning laboratory for viscose and cellulose carbamate, a mini pilot plant for the processing of cellulose according to the lyocell technology, extruders, an accredited materials testing lab, several analytical methods including rheology and thermoanalysis, as well as comprehensive methods for solid state characterization (electron microscopy, X-ray scattering, NMR- spectroscopy, among others).

The range of current R&D work with regard to cellulose only may be demonstrated by the following projects:

- new cellulose derivatives
- microcarriers
- hemicelluloses
- bacterial cellulose
- natural fibre reinforced materials
- new commodity materials
- food casing processing routes
- cellulose carbamate fibre technology
- structure-property relationships of fibres, films, and composites

More detailed information regarding the Natural Polymer Division are available at the home page

http://www.iap.fhg.de.

Prof. Dr. habil. Jörg Florian Friedrich

Bundesanstalt für Materialforschung und –prüfung
Division VI.3: Analysis and Structure of Polymers

The following topics are investigated in a great number of internally and externally funded projects:

certification and validation of polymers

- Emission of low-molecular weight substances from plastics and migration of additives in polymers (TOC, Headspace-GC, GC-MS, HPLC-MS, MS^n, Ion-trap MS, SPME technique etc.)
- Certification and testing of plastics in contact to foods and drinking water as well as investigations of damages in polymers and composites
- Aging / photodegradation of HALS stabilized polymers; migration of HALS

macromolecular analysis; reference materials

- Characterization of polymers, especially evaluation and certification of polymer standards by application and development of reference methods (viscometry, osmometry, light scattering, SEC, high-temperature SEC, HPLC, SFC, IR- and UV-MALDI-TOF MS, Asymmetric and Thermal Field Flow Fractionation, NMR, FTIR)
- Chromatographic and spectroscopic characterization of copolymers (liquid adsorption chromatography under critical conditions-LACCC, 2D-HPLC)

polymer surfaces; plasma technique, adhesion

- Analysis of polymer surfaces and thin polymer films (XPS, SFM/SPM, SEIRA, IRRAS, ATR, DRIFT, FTIR microscopy); orientation of macromolecules at surfaces (NEXAFS, GIR); preparation of monomolecular model films (Langmuir-Blodgett and Self-Assembling techniques)
- Functionalization of polymer surfaces by plasma treatment; deposition of thin homo and copolymer layers bearing functional groups of different type and density; syntheses and grafting at polymer surfaces; hydrophobic-hydrophilic 2D structures; wrapping of nanoparticles with functional groups and thin polymer layers
- Diagnostics of plasmas by self-excited electron resonance plasma spectroscopy in polymer-depositing plasmas; optical emission spectroscopy; probe and ion MS; hyphenating of plasma treatment and XPS surface analysis
- Characterization of interfaces; interfacial reactions in polymer composites; nanocomposites and metal-doped polymer layers; adhesion phenomena

characterization of polymer solids

- Preparation of carbon nanotubes, nanofibres and carbon nitride powders using plasma and CVD methods; hydrogen storage capability of nanofibres/nanotubes; electrically conducting composites
- Characterization of polymer solids and thin polymer films by dielectric relaxation spectroscopy and dynamic mechanical analysis
- Molecular modeling of polymer structures (LC; copolymers; interface/interphase in blends)
- Permeation of polymers; modeling of permeation; formation of barrier layers (fluorination and oxyfluorination by gas-phase or plasmachemical treatments)

Prof. Dr. Reimund Gerhard-Multhaupt

Universität Potsdam, Institut für Physik
Chair of Applied Condensed-Matter Physics

Main research area:

Quasi-permanent charge storage and dipole orientation in homogeneous and heterogeneous polymer electrets mainly for transducer applications:

- Preparation of uniform, voided, or oriented films of highly insulating polar or non-polar polymers by means of spin coating, solution casting, hot pressing, high-temperature stretching, sandwich fusing, etc. plus vacuum deposition of metal electrodes if required
- Global or patterned electric charging or poling of dielectric polymer films by means of biased electrodes, corona or plasma discharges, electron beams, etc. at various temperatures
- Thermal (pyroelectrical) and acoustical (piezoelectrical) probing of electric field, charge or polarisation profiles in the thickness direction of thin electret films, surface-potential and pyroelectrical probing in the film plane
- Dielectric spectroscopy over large temperature and frequency ranges including piezoelectric resonance measurements as well as thermally stimulated or isothermal discharge or depolarisation experiments
- Investigation of dipole orientation, ferroelectricity (switching, hysteresis, etc.), quasi-static and dynamic pyroelectricity, direct and inverse piezoelectricity in polymer-electret films
- Investigation of charge storage and transport and their molecular mechanisms in dielectric polymers, in particular at high electric fields, by means of electrical and optical methods
- Demonstration and assessment of applications-relevant electro-mechanical, mechano-electrical, and thermo-electrical transducer properties of novel or modified polymer electrets

Other research topics:

Nonlinear optical properties of electrically poled polymers including electro-optical effects and optical second-harmonic generation

Viscoelastic spatial light modulators without or with reflective metal electrodes for applications in optical information processing and light-valve projection of high-resolution images

Physics of musical instruments, in particular materials- and geometry-related vibration behaviour of historic and modern organ pipes

Homepage: http://canopus.physik.uni-potsdam.de/

Prof. Dr. Andreas Hampe

Bundesanstalt für Materialforschung und –prüfung
Department VI "Function of Polymers"

The department consists of the divisions

VI.1 "Durability of Polymeric Materials"
VI.2 "Mechanics of Polymers and Composites"
VI.3 "Analysis and Structure of Polymers"

The divisions VI.1 and VI.3 are headed by Prof. W. Mielke and Prof. J. Friedrich, both also members of the BVP. The research activities of these divisions are described on their pages of this booklet.

In the division VI.2, which is headed by Dr. Ch. Marotzke, the mechanical properties of Polymers and composite materials are investigated with a special focus on the micro mechanics. The aim of the research is a better understanding of the behaviour of composite materials under mechanical loads and the identification of the dominating failure mechanism. For the detection of micro damages sound emission measurements and measurements of inner surfaces using a X-ray refraction technique are performed.

Further details on the projects and the research equipment can be found in the internet:

http://www.bam.de .

Prof. Dr. Manfred Hennecke

Bundesanstalt für Materialforschung und -prüfung (BAM)
President of BAM

In the Federal Institute for Materials Research and Testing (guideline: safety and reliability in chemical and materials technologies), projects in polymer science are mainly carried out in the department VI “Function of Polymers” (see reports of A. Hampe, W. Mielke, and J. Friedrich).

In special areas, applied research and testing in polymer science and technology is done by other departments of BAM, e.g.: polymers in the building trade (M. Maultsch, BAM VII.0), microbiological degradation of polymers (M. Pantke, BAM IV.1), analysis of polymer surfaces (W. Unger, BAM VIII.23), non-destructive testing of polymers- and compound materials (M. Hentschel, BAM VIII.32), use of polymers for the packaging of dangerous goods (BAM III.2) , polymers in the technology of landfills (W. Müller, BAM IV.3), polymer optical fibres (W. Daum, BAM S.1).

For further information please visit the Web site of BAM:

http://www.bam.de

In cooperation with the department “Function of Polymers” of BAM, M. Hennecke is personally engaged in the development and application of luminescence technics for the characterisation of polymers, e.g.with respect to molecular orientation, photo-oxidation, degradation and crosslinking.

Prof. Dr. Siegfried Hess

Technische Universität Berlin
Theoretical Physics

This group, which is part of the Institute of Theoretical Physics at the TUB, treats problems in statistical physics in order to explain physical phenomena of the various kind. The work focuses on the calculation of equilibrium and nonequilibrium properties of liquid and solid materials. Simple and complex substances are considered, such as liquid crystals, colloidal solutions, dilute polymer solutions and polymer melts. Apart from conventional approaches of theoretical physics also numerical methods, such as molecular dynamics (MD), nonequilibrium molecular dynamics (NEMD), smooth particle dynamics Monte Carlo computer simulation are employed. The goal is to determine macroscopic properties based on microscopic models.

The theoretical investigations on polymeric materials in the dilute, molten and glassy states are centered around the analysis of the interrelation between rheological properties on the one hand, and structural and conformational changes of macromolecules on the other hand. The simulations also provide data which can be directly compared with experimental input obtained from flow birefringence, light and neutron scattering measurements.

Website for further information:

http://wwwitp.physik.tu-berlin.de/hess/

Prof. Dr. Georg Hinrichsen
(currently on special leave of absence)

Technische Universität Berlin
Fachgebiet Polymerphysik

The research activities of the Fachgebiet Polymerphysik are concerned with the description and characterization of polymeric materials using various physical methods of investigation. Main object is the understanding of the interrelations between macroscopic (physical and technical) properties and the morphological (microscopic and sub-microscopic) structure of these materials.

The research projects can be summarized in the four complexes of themes:

Oriented semi-crystalline Polymers (Dr. H. Springer)

Observation of structure and orientation distribution of uniaxially or biaxially stretched polyamide, polyethylene terephthalate and LLD-polyethylene films by WAXS, SAXS, light scattering, DSC; thermal-mechanical analysis, IR-spectroscopy, polarized fluorescence spectroscopy, dielectric relaxation spectroscopy and optical birefringence.

Fibre-reinforced polymeric composites

Production and characterization of fibre-reinforced polymers with unique properties: Carbon fibre/carbon composites; aramid fibre/polyamide composites; natural fibre reinforced polymers; biocomposites.

Development of production technologies of fibre reinforced composites: Aqueous dispersion impregnation process; dry powder impregnation process.

Polymeric nanofilms

Design of a laboratory equipment and process for the continuous production of polymeric nanofilms with 20 – 100 nm thickness. Characterization of the produced films and check on their applicability in membrane and sensor technology.

High-temperature superconducting films (Dr. I. von Lampe)

Production and characterization of HTSC films and coatings using polymer metal precursors (polymethylmethacrylate, polyacrylic acid, novolac).

Internet information

http://tu-berlin.de/fb6/polymerphysik

Dr. habil. Werner Jaeger

Fraunhofer-Institut für Angewandte Polymerforschung Golm
Forschungsbereich „Wasserbasierende Polymersysteme“
Department “Water Born Polymers”

Synthesis and characterization as well as selected application of completely or in part water soluble polyelectrolytes, hydrophilic gels and polymer colloids.

Water Soluble Polymers

- Synthesis: block, graft, comblike and alternating copolymers variing electro-chemical and molecular parameters; polymeric surfactants; reversible and irre-versible gels.

- New technologies for the preparation of water soluble polymers: dispersion polymerization in aqueous systems, graft copolymerization in inverse emulsion, controlled radical polymerization.

- Selected application: processing aid for seperation processes.

Polymer Colloids

- Synthesis: emulsion and dispersion polymerization in aqueous and inverse systems

- Products: Tailor-made dispersions concerning particle size and particle size distribution, particle morphology, functionality and reactivity

- Characterization: Size and density of particles, particle electrophoresis, charge titration rheology of concentrated dispersions.

Prof. Dr. J. Koetz

Universität Potsdam
Colloid Chemistry

Synthesis and characterization of well-defined polyelectrolytes
Different types of polyelectrolytes were synthesized and characterized by means of dynamic and static light scattering as well as different potentiometric titration techniques.

Interactions between colloidal particles and polyelectrolytes
The adsorption of polyelectrolytes on the surface of colloidal particles (kaolin, barium sulfate, sludge) is investigated by using different methods of charge determination (electrophoretic light scattering, streaming potential, acoustophoresis). The mechanism of the interaction and multiple reloading of colloidal particles in presence of polyelectrolytes are discussed.

Polyelectrolyte complex formation
The complex formation behavior of oppositely charged polyelectrolytes is investigated at different polymer concentrations. In diluted systems the research is focused on the complex formation mechanism by using static and dynamic light scattering techniques. The cooperative nature of complex formation in mixed polyelectrolyte-surfactant systems has been investigated by using a potentiometric technique based on a surfactant selective electrode. Concentrated polyanion-polycation systems are characterized by means of polarising microscopy, DSC-measurements, and wide angle X-ray scattering. In addition, protein-polysaccharide complexes are characterized by electron microscopy.

Mesoscopic organized colloidal systems
The structure formation in liquid crystalline lamellar systems, consisting of water/long chain alcohol/surfactant, is investigated in absence and presence of polyelectrolytes. Phenomena of self-organization in amphiphilic mesophases are used to modify the bilayer structures by incorporation of polyelectrolytes. SANS measurements show a temperature induced transition from a compact to a more swollen liquid crystalline phase in such polymer-modified systems.

To what extent polymers favour or restrain the formation of microemulsions is revealed by the phase diagrams in multi-component systems. The influence of polymers on the phase behavior is studied by means of electric conductivity, rheology, NMR relaxation and self-diffusion experiments, polarising microscopy, micro-DSC, and electron microscopy. The incorporation of polyelectrolytes can induce the extension of the isotropic liquid crystalline phase as well as transitions to lamellar liquid crystalline phases. Such polyelectrolyte-modified microemulsions can be used as template phases for a controlled nanoparticle formation.

Prof. Dr. Gerhard Koßmehl
(retired)

The scientific projects at Freie Universität Berlin are mostly finished. Results not yet published are under work and will be completed for publication.

Aim of research have been and are:
new synthetic routes to macromolecular organic materials in order to create new or modified polymers , that are characterized in relation to their chemical structures and tested for interesting properties in science and technique.

Topics of research:

- Electrical conductive materials
- Liquid crystalline polymers
- Hydrogels and other polymers for application in ophthalmic medicine
- Modification of polymer surfaces
- Reactive polymers - Reactions on and with polymers
- Sensors on the basis of enzyme electrodes
- Polymers in agriculture.

Within the scope of WiTeBü Berlin are offered chemical and technical chemical consultations and examinations as well as popular-scientific presentations (lectures, seminars and arrangements) for the information of non chemists in general chemical problems in everyday life. Topics are: fundamental biochemistry, organic and macromolecular chemistry, material sciences and environmental problems.

Prof. Dr. André Laschewsky

Fraunhofer-Institut fürAngewandte Polymerforschung und
Universität Potsdam
Institute of Chemistry, Chair for Applied Polymer Chemistry

The research interests focus on the design, the synthesis and the characterization of novel functional monomers and polymers. Particular attention is paid to polymers in aqueous media, the self-organization of polymers therein and at interfaces, and the functionalization of the assemblies formed. The understanding of the correlation between molecular architecture, supramolecular structure and macroscopic properties of polymers is aimed at.

Recent activities comprise:

New monomers which are suited for polymerization reactions in aqueous media

New polymerization reactions that are suited for aqueous media

New methods of "controlled free radical polymerization"

Amphiphilic monomers and polymers:
polymeric monolayers and multilayers, polymeric lyotropic liquid crystals, micellar polymers, polymeric surfactants, polymeric model membranes)

Novel emulsifiers for emulsion polymerization

Hydrogels

Polymer surfaces

(Ultra)Thin polymer coatings

Ion containing polymers
(polyelectrolytes, polyelectrolyte complexes, polyzwitterions, ionomers, blends of polymers and inorganic compounds (hybrid materials))

Stimuli-responsive polymers

Polymers for non-linear optics

Prof. Dr.-Ing. Werner Mielke

Bundesanstalt für Materialforschung und –prüfung
Division VI.1 “Durability of Polymeric Materials”

The division is part of the department VI “Performance of Polymeric Materials” Its tasks are

- Investigation of the resistance of engineering and functional polymers to chemical, thermal and photochemical attack
- Development of methods for the acceleration of ageing tests and of methods for the early detection of ageing phenomena in polymers
- Development of reference methods, establishment of rules and specifications for ageing tests
- Investigation of damages caused by deterioration of engineering plastics by ageing
- Development, production and certification of elastomeric reference materials

Current projects

- Resistance of geopolymers against hydrolytic and oxidative attack
- Chemical resistance of polymers used as packaging materials for the transport of dangerous goods
- Thermal analysis of polymers
- Combustion behaviour of polymers
- Thermoluminescence of polymers
- Photochemical ageing of polymeric materials
- Cure-monitoring of thermosets and rubber
- Crosslink density of technical elastomers

Further projects and a summary of methods and technical equipment can be found at

- http://www.bam.de/english/expertise/areas_of_expertise/department_6/division_61/division_61.htm

Further activities:

- Secretary of the German Society of Rheology (“Deutsche Rheologische Gesellschaft (DRG) e. V.”) http://www.drg.bam.de

Prof. Dr. Helmuth Möhwald

Max-Planck-Institute of Colloids and Interfaces, Golm
Department of Interfaces

The scientific activities focus largely on molecular interfaces of low molecular and high molecular weight compounds. As regards polymeric interfaces the main research areas are:

- Coupling of polyelectrolytes with amphiphilic monolayers, studied predominantly by grazing incidence X-ray diffraction and FTIR-spectroscopy. In addition the interactions are investigated via lateral diffusion measurements.

- Enzymatic reactions at membrane surfaces.

- Structure and optical properties of multilayers composed of polyelectrolytes, inorganic nanoparticles and proteins.

- Hydration and structure of polymer films on colloids, with most important technique NMR relaxation studies

- Hollow polyelectrolyte capsules with responsive properties as regards permeation, mechanics, adhesion and molecular recognition.

- Chemistry and physics in nanocontainers

- Electron and energy transfer in polymer films

Prof. Dr. Dieter Neher

Universität Potsdam
Lehrstuhl für Experimentalphysik

Electroluminescence Devices
Light-emitting diodes with linearly-polarized emission, polyfluorene-based LEDs, electrophosphorescence

Electrooptical Devices based on Aligned Polymer Layers
polarization-sensitive photodiodes, alignment of polymer liquid-crystals by ultrathin photoaddressable polymers.

Polymer composite devices
polymer based solar cells, polymer blend emission layers, polymer nanoparticles.

Photorefractive Polymers
Photoconductivity and charge carrier generation in organic photorefractive composites, modeling of response time, determination of trap densities.

Electromechanics
Measurement of the mechanical properties of ultrathin layers as a function of temperature and frequency, photoinduced softening, grafted polymer layers, ferroelectric polymers.

Fluorescence and Raman Spectroscopy
Orientation of liquid-crystals, polarized emission spectroscopy, determination of order parameters

Prof. Dr. Dieter Paul (retired 1 June 2002)

GKSS-Forschungszentrum Geesthacht GmbH
Institut für Chemie Geesthacht/Teltow

The Institute of Chemistry of GKSS is unique in its interdisciplinary research and development activities in membrane and separation technology within the program of the Hermann von Helmholtz Assocciation of German research centres. Competent staff and suitable and advanced equipment are important pre-conditions for the development of new solutions for separation problems in process-, environmental-, bio- and medical technology.

The institute`s section in Teltow performed mainly fundamental research for flat and hollow membranes starting from a molecular modelling of structure-property relation and new procedures for the synthesis of special polymers accentuating the application in life sciences, and elaboration of suitable analytic techniques and procedures in collaboration with the Geesthacht section, whereas this section is focused more on manufacturing of membranes, development of membrane modules and reactors, process development and operation of pilot plants.

The use of membranes in process technology is concentrated on the subject areas:

- membrane reactors
- membrane for fuel cells
- water processing
- hybrid processes
- natural gas conditioning
- process and flue gas treatment.

Membrane relevant subjects in bio- and medical technology are:

- biohybrid systems with organ supporting functionality
- bioprocess technology.

In future , the institute`s activities will be centered on regenerative medicine (development of biohybrid organs, apheresis, and tissue engineering) and functional material systems (stimuli-sensitive polymer systems, nano-composites, membranes).

National collaborations, e. g. with the universities of Berlin and Potsdam, Institutes of the Max-Planck-Society and the Fraunhofer-Society, and the industry and international cooperation as well as GKSS internal support were major factors for the success of research projects carried out by the Institute of Chemistry in its two locations in Geesthacht and Teltow.

Prof. em. Dr. habil. Dr. h. c. Burkart Philipp
(retired)

Main topic was the history of the Teltow-Seehof area of polymer and colloid research in connection with the 10th anniversary of the new institutes founded in 1992. Besides this, advisory activities to scientists and institutions in chemistry, physics and technology of cellulose are to be mentioned.

Prof. Dr. Jürgen P. Rabe

Humboldt-Universität zu Berlin
Institut für Physik

Research Topics:

- Structure and dynamics of molecular nanostructures
- Correlation with electronic, optical, mechanical and (bio-)chemical properties from molecular to macroscopic length and time scales
- Fabrication of nanostructures from synthetic and biological macromolecules employing interfacial forces and selforganization
- Molecular dynamics simulations
- Development of methods for interfacial optics and scanning probe microscopies including STM, SFM and SNOM
- Basic research for a molecular information technology

R&D-Equipment:

- UHV and HV-deposition of metals and molecular materials
- Plasmareactors
- Physical-chemical preparation and characterisation of thin organic films (spin-coating, self-assembly, Langmuir-Blodgett-technique)
- Confocal optical microscopy
- Imaging ellipsometry & Brewster-Angle Microscopy
- Tunneling-Microscopy & -Spectroscopy (STM/STS) at solid-liquid/gas-interfaces
- Dynamic Force-Microscopy (SFM) at solid-liquid/gas-interfaces
- Optical Nearfield-Microscopy (SNOM)
- Workstations for Molecular Dynamics-Simulations

Information in WWW: http://www.polymerphysics.de

Prof.Dr.K.-H.Reichert

Technische Universität Berlin
Chemical Reaction Engineering, Polymerization Technology

The following research projects are studied currently:

Polymerization of olefins in the gas phase with supported catalysts
- kinetic studies of single catalyst particles by using video microscopy
- fast screening of activity of polymerization catalyst by using mini reactor technology
- modelling of kinetics, molecular weight distribution and particle size distribution

Prof. Dr. A. D. Schlüter

Freie Universität Berlin
Fachgebiet Organische Chemie, Polymersynthese

Our research is in the area of synthetic organic chemistry and is mainly directed towards the synthesis of structurally novel types of mono- and polydisperse macromolecules. Special monomers are designed and synthesized as well as new polymerization procedures are developed to achieve this goal. A wide range of chemistry including main group and transition-metal organics plays a role here. For the new polymerization strategies and procedures it is of utmost importance that they meet the basic criteria for a good polymer synthesis like efficiency and controlled reaction courses. Above all, access to oligomers is necessary, because they are immeasurably valuable as models for structure assignments, and for extrapolating the properties of the respective polymers.

Chemical modification of polymers is also an important aspect in our group, whereby the central question is to which extent a certain modification can be achieved. The group strongly cooperates with physical chemists, physicists, pharmaceutical chemists, spectroscopists, and theoreticians of various nations and institutions in order to determine the properties of the new macromolecules prepared.

Some of the projects being worked on are aimed towards certain structural types which promise to have interesting properties based on materials science or general physical knowledge. This project area reflects the interdisciplinary nature of polymer research, since the selection of target structures requires the interaction of physicists, materials scientists, and chemists. Concrete projects currently being worked on are as follows:

- Polyarylenes (Suzuki polycondensation)
- Dendritic structures with cylindrical shape (dendronized polymers, nanorods, nanoobjects)
- Repetitive syntheses
- Dendrimers with quantifiable polarity gradients and for cancer research
- Buckyboards and buckybelts (double-stranded, cyclic aromatics)
- Shape-persistent macrocycles
- Two-dimensional networks

Prof. Dr. Reinhard Schomäcker

Technische Unviersität Berlin
Fachgebiet Technische Chemie

Reaction Kinetics in Multiphase Systems
Determination of micro and macro kinetic parameters and development of models for desciption of reactions in micellar solutions, emulsions and microemulsions. For kinetic investigations conventional and relaxation methods are used.

Homogeneous Catalysis in Microemulsions
Reactions of hydrophobic reactants with hydrophilic catalysts like enzymes or metal complexes are carried out with high rates by means of microemulsions. By means of these reaction media the advantages of homogenous and heterogeneous catalyses can be combined.

Reaction Engineering for Production of Nanoparticles in Microemulsions
The development of procedures for sythesis of nanoparticles in microemulions requires the detailed understanding of this complex process of particle formation in a micro-heterogeneous media. The mechanism was found to be very similar to that of emulsion polymerization.

Development of Reactive Membranes based on Polymer-Metal-Compound Systems
This research is a cooperation of the working groups Reichert and Schomäcker and is a project within Sfb 448 “Mesoscopic structured compound systems”.

Molecular Imprinting
Imprinting of suitable template molecules in polymer networks enables the production of artificial enzymes and antibodies which are remarkably more durable than their natural analogues. Especially, catalytically active, molecularly imprinted synthetic materials are produced in different configurations, such as ground particles or membranes, and they are examined according to the aspects of reaction engineering. Moreover, imprinted polymers can also be used as stationary phases in chromatogaphy.

Priv.-Doz. Dr. Andreas Schönhals

Bundesanstalt für Materialforschung und –prüfung (BAM)
Fachgruppe VI.3: Analyse und Struktur von Polymeren

The main research field is the investigation of molecular dynamics and the structure of complex polymeric systems. Experimental main methodologies are relaxation methods like broadband dielectric spectroscopy. The main point is the evaluation of molecular mechanisms and its theoretical undersratnding. Moreover new measuring techniques and evaluation strategies are under consideration.

Actual topics

Molecular dynamics of low molecular weight glass forming systems and polymers in confining geometries like nanoporous glasses, zeolithes and on surfaces.
Correlation of molecular dynamic, photochemical and photochemical induced processes in photochromic polymers

Structure and molecular dynamic of liquid crystalline polymers
Sorption and permeation of gases trough complex polymeric systems.
Molecular dynamic simulation of selected polymeric structures and comparison with experimental data.

Objects of Research

Polymer Synthesis

- Synthesis of heat resistant polymers and preparation of fibres, membranes and ultra thin films
- Synthesis of high performance polymers for applications in nano-technology, microsystem technology, and microsensorics
- Development of new synthetic routes for 1,3,4-oxadiazoles
- Polymerisation and chemical modification of side chain polymers as photoactive materials for data storage or as sensitive materials
- Preparation and processing of electrically conducting polymers

Preparation and investigation of supramolecular and nanosized structures

- Preparation and characterisation of highly ordered layers based on substituted aromatic oxadiazoles and polyoxadiazoles by vacuum deposition methods, Langmuir-Blodgett technology and self assembling techniques
- Investigation of the structural, spectroscopic and optical behaviour of organic materials under ultrahigh pressure
- Preparation of oxadiazole crystals and characterisation of their non-linear optical properties
- Synthesis and characterisation of liquid-crystalline oxadiazoles

In co-operation with the Institute of Thin Film Technology and Microsensorics Teltow (http://www.idm-teltow.de)

- Synthesis of new polymers as sensitive materials or as resists for e-beam- and deep UV- lithography
- GPC and HPLC
- Polymer surface characterisation by AFM, ATR-IR-spectroscopy and contact angle measurements

Prof. Dr. J. Springer
retired since 1st of April 2000

The research concerns with interdependencies of the chemical structure and the physical resp. physico-chemical properties of polymers. The synthesis of monomers and polymers is directed to the production of model substances resp. polymers with a defined structure as possible.

The topics within this research are:

Synthesis, analytic and properties of functional polymers:

Photoactive, redoxactive and liquid crystalline side group homo- and copolymers. Highly branched biocompatible carriers for x-ray contrast agents. *)

Rheo-optical properties of polymer solutions:

Light scattering of dilute solutions in shear flow (investigation of the shear-induced orientation and deformation of macromolecules). *)

Gas permeability of polymers:

Solubility of gases and their diffusion in polymers. *)

Interfacial properties of composite materials:

Fiber/polymer interfaces. Surface modifications. Adhesion. Wetting phenomena. Characteriza-tion of surfaces by electrokinetic measurements. Influence of surrounding gases on the interfacial tension of polymer liquid crystalls.

*) The experimental investigations within these research fields are finished.

For further informations please visit the web site at:

http://www.tu-berlin.de/~itc/springer

Prof. Dr.-Ing. Manfred. H. Wagner
Emeritus: Prof. Dr. Helmut Käufer

Technische Universität Berlin
Polymer Engineering and Physics Group

Polymer Engineering and Physics together with the Groups of Glass, Ceramic, and Metallic Materials Science and Engineering, form the Institute of Materials Science and Technology of TU Berlin. The Institute is part of Faculty III Process Sciences. The Polymer Engineering and Physics Group offers students of "Material Science" the subject "Organic Materials" to specialise in, and students of other engineering fields (mechanical engineering, process engineering, biomedical engineering, civil engineering, business administration and engineering, architecture) compulsory and optional courses with a focus on polymer engineering and physics.

The Polymer Engineering part of the group with its polymer processing laboratory is located in the building WF at Fasanenstrasse 90. The Polymer Physics part of the group together with the groups of glass and ceramic materials are situated at Englische Strasse 20. On an overall lab and office space of about 2400 m^2, the Polymer Engineering and Physics Group is well endowed with all important machinery and equipment for polymer processing (extrusion, film blowing, injection moulding, hot pressing and forming etc.) and polymer testing (mechanical, rheological, thermal, electrical, morphological). Main research fields are:

- CAD based engineering of all kind of plastic parts
- Development of a mini-injection moulding machine and mini-test bars for evaluation of mechanical properties of polymer materials on the basis of 3 to 5 g of material
- Innovative applications of polymer engineering techniques in biomedical engineering, e.g. polymer stents with shape memory effect, development of polymer products for biomedical engineering (lenses, surgical suture, dental implants, catheter, polymer stents and polymeric coating of stents)
- Rheology of polymer melts and solutions, development of rheological constitutive equations, analysis and optimisation of polymer engineering processes
- Recycling of plastic waste from PVC, PE, PP, PA, PC, electronic boards from epoxy resin, etc. Recycling of polymer composites from packing residues by dissolution; reprocessing of polymer and solvent
- Analysis of structure and morphology of polymers (density, dielectric and mechanical measurements, wide and small angle x-ray measurements, DSC)
- Analysis of mechanisms of deformation and relaxation of polymers and polymer composites
- Mechanical and optical spectroscopy of polymeric materials
- Thermal analysis of thermoplastics and their composites
- Fibre-reinforced high-performance composites from glass, aramid and carbon fibre with thermoplastic matrices
- Mechanical and optical spectroscopy of polymeric materials
- Development of polymer-metal precursors for high temperature super conductive films

http://www.tu-berlin.de/fb6/polymer
http://www.tu-berlin.de/fb6/polymerphysik

Nachruf auf Professor Dr. rer. nat. Gerhard Kanig

Am 26. Oktober 2002 verstarb im 86. Lebensjahr in Ludwigshafen am Rhein Professor Dr. Gerhard Kanig, der unserem Verband als korrespondierendes Mitglied seit 1991 angehörte.

Gerhard Kanig wurde am 11. April 1917 in Berlin geboren und ist in einem wenig begüterten Elternhaus als erster Sohn eines Postbeamten in Kreuzberg aufgewachsen. Nach seinem Abitur 1936 an der Arndt-Oberrealschule begann er 1937 an der Friedrich-Wilhelms-Universität zu Berlin Chemie zu studieren. Bei Ausbruch des zweiten Weltkriegs wurde er 1939 zur Luftwaffe eingezogen. 1943 gelang es ihm, Studienurlaub zu erhalten und dem Dienst an der Kriegsfront zu entkommen. Unter der Anleitung des Gründungsmitglieds unseres Verbandes, Professor Dr. Kurt Ueberreiter, fertigte er im damaligen Kaiser-Wilhelm-Institut für Physikalische Chemie und Elektrochemie, dem heutigen Fritz-Haber-Institut der Max-Planck-Gesellschaft, in Berlin-Dahlem seine Diplomarbeit „Über die Temperaturabhängigkeit des Volumens makromolekularer Stoffe“ an und legte im März 1943 das Diplom-Hauptexamen ab. Er setzte seine wissenschaftlichen Arbeiten am Kaiser-Wilhelm-Institut fort und konnte noch wenige Wochen vor Kriegsende am 30. März 1945 mit einer Dissertation über „Die Abhängigkeit der Raumerfüllung und Beweglichkeit bei Styrol-Divinylbenzol-Mischpolymerisaten vom Vernetzungsgrad“ an der Friedrich-Wilhelms-Universität zu Berlin promovieren.

Auch nach dem Krieg blieb Gerhard Kanig bei Professor Ueberreiter, zunächst als Assistent und von 1948 bis 1957 als Oberassistent im Kaiser-Wilhelm- bzw. später Fritz-Haber-Institut. 1958 wechselte er an das Max-Volmer-Institut für Physikalische Chemie der Technischen Universität Berlin als Oberassistent von Professor Dr. Iwan-N. Stranski. Noch im selben Jahr legte er der Fakultät für Allgemeine Ingenieurwissenschaften seine Habilitationsarbeit mit dem Titel „Untersuchungen über Schmelz- und Gefriervorgänge in konzentrierten Lösungen und gesättigten Gelen“ vor. 1959 erhielt er die venia legendi für „Physikalische Chemie“ an der Technischen Universität Berlin.

Von Januar 1959 bis zu seiner Versetzung in den „Ruhestand“ im Juni 1982 war Gerhard Kanig als leitender Angestellter der Badischen Anilin- & Soda-Fabrik AG in Ludwigshafen am Rhein in der Forschung tätig. Er baute ein kolloid-chemisches Labor auf und bearbeitete grundlegende physikalisch-chemische Fragen über das Verhalten von makromolekularen und kolloidal vorliegenden Stoffen. Nebenher hielt er als Privatdozent am Institut für physikalische Biochemie und Kolloidchemie der Johann Wolfgang Goethe-Universität Frankfurt am Main eine Vorlesung über die „Physikalische Chemie der Polymere“. Er wurde dort 1966 zum außerplanmäßigen Professor und 1973 zum Honorarprofessor ernannt.

Während der Berliner Zeit mit seinem akademischen Lehrer und dann als Chemiker in der Industrie hat Gerhard Kanig mit fundamentalen Arbeiten zum Fortschritt der Polymerforschung beigetragen. An den seinerzeit besonders intensiv geführten Diskussionen über die Natur des festen Zustands und die der Umwandlungserscheinungen bei Polymeren, deren glasiges Erstarren, deren Kristallisieren und Schmelzen, war er aktiv beteiligt. Als wegweisend für viele Arbeitsgruppen weltweit sind

seine zahlreichen Publikationen zur Morphologie von Polymeren, vornehmlich des Polyethylens, auf der Grundlage elektronenmikroskopischer Untersuchungen einzustufen.
Er entwickelte die Methode der Kontrastierung mittels Chlorsulfonsäure und die Verstärkung des Kontrasts zwischen den kristallinen und nicht-kristallinen Bereichen durch Nachbehandlung z.B. mit Uranylacetat. Ein großer Teil seiner Publikationen sind in der Kolloid-Zeitschrift & Zeitschrift für Polymere, heute Colloid & Polymer Science, erschienen, an deren Herausgabe er als langjähriges Mitglied der Kolloid-Gesellschaft viele Jahre mitgewirkt hat.

Durch seine Körpergröße, kräftige Stimme und sein oft herzhaftes und schallendes Lachen war Gerhard Kanig selten zu übersehen und zu überhören. Den Standort seiner Wiege durch einen gepflegten Dialekt, nicht zuletzt aber auch durch sein lockeres, für Bürger seiner Heimatstadt als typisches Merkmal angesehenes Mundwerk zu erkennen zu geben, hat ihm nicht nur sichtlich Spaß gemacht, sondern ihn auch mit einem gewissen, ihm eigenen Stolz erfüllt. Er scheute nicht, seine Gedanken stets im Klartext auszusprechen, was nicht immer von allen mit Wohlwollen zur Kenntnis genommen wurde. Etwas altmodisch ausgedrückt, Gerhard Kanig ist in seinem Herzen immer ein Berliner geblieben. Jahrzehntelang war er Mitglied im ehrwürdigen Verein der Geschichte Berlins. Er war ein Verehrer Friedrichs des Großen. Im „Berliner Kreis“ seiner Industriekollegen, einem Freundeskreis, der ihm viel bedeutete und dem er sich tief verbunden fühlte, galt er als „letzter Preuße“.

Gerhard Kanig war ein sehr naturverbundener Mensch. Alljährlich in den Sommermonaten zog es ihn mit seiner Frau Lore in das einsam gelegene Haus auf ihrem weitgehend naturbelassenen Grundstück im Pfälzer Wald. Das Leben hier und viele Fernreisen zu den Naturschönheiten der Erde gaben ihm Erholung und waren Kraftquelle für seine Arbeit. Als Mitglied des World Wildlife Fund (WWF) hat er sich leidenschaftlich ideell und materiell für den Erhalt der Fauna eingesetzt.

Von seinen Erlebnissen und seinen Lebenserfahrungen erzählte Gerhard Kanig gern. Er suchte das anregende Gespräch und diskutierte interessiert auch Ansichten, wissenschaftliche eingeschlossen, die nicht immer mit seinen übereinstimmten. Er setzte sich ernsthaft mit Einwänden auseinander, was ihm den Respekt seiner Gesprächspartner unabhängig von deren Lebensalter verschaffte. Die Mitglieder unseres Verbandes, seine Kollegen und Freunde werden ihn so stets in Erinnerung behalten.

J. Springer

Nachruf auf Prof. Dr. rer. nat. Bruno Vollmert

Der Berlin-Brandenburgische Verband für Polymerforschung trauert um sein korrespondierendes Mitglied Professor Dr.rer.nat. Bruno Vollmert, der am 25. April 2002 nach längerer Krankheit im Alter von 81 Jahren verstorben ist. Bruno Vollmert studierte Chemie in Bonn, Freiburg und Karlsruhe. Ab 1950 arbeitete er in der Industrieforschung, u.a. über Synthesen makromolekularer Stoffe, und erhielt zahlreiche Patente. 1965 folgte Professor Vollmert einem Ruf nach Karlsruhe, wo er das Fachgebiet Makromolekulare Chemie einführte. Bis 1986 war er Ordinarius für Chemische Technik der makromolekularen Stoffe und Direktor des Polymer-Instituts. In seiner 21jährigen Tätigkeit an der Universität Karlsruhe auf dem Gebiet der Polymersynthesen und -reaktionen sowie der Untersuchung von Polymerstrukturen hat er das Karlsruher Polymer-Institut sowie die Forschung und die Lehre im Fach Makromolekulare Chemie wesentlich geprägt. International bekannt wurde Professor Vollmert nicht zuletzt durch sein Lehrbuch „Grundriss der Makromolekularen Chemie“, das zuerst 1962 erschien, in mehrere Sprachen übersetzt und 1979, 1980, 1982 und 1989 wieder neu aufgelegt wurde.

R. Gerhard-Multhaupt

The Graduiertenkolleg Polymerwerkstoffe – a story of success

In 1992 the Graduiertenkolleg Polymerwerkstoffe started its 10 years lasting life-story with an opening ceremony introduced by the President of the Technical University of Berlin, Professor Manfred Fricke. Due to the recommendations of the Wissenschaftsrat and other leading scientific organizations the Deutsche Forschungsgemeinschaft (DFG) had fostered the establishment of Graduiertenkollegs in the early 90s. Reasons for the establishment had been identified by the lack of postgraduate education of German PhD students, the intended shortening of the period for the accomplishment of the PhD thesis towards a three years period and the intensification of the interdisciplinary character of PhD work. The Graduiertenkolleg Polymerwerkstoffe had been extended, for the first time, in 1995, and due to ist great success, for the second time, in 1998 until March 31, 2002 including a one-year run-out period.

A great number of institutes of the four regional universities, the Technical University of Berlin (TUB), the Free University of Berlin (FUB), the Humboldt-University at Berlin (HUB) and the University of Potsdam (UP), as well as various leading institutes of materials research, the Hahn-Meitner-Institut (HMI), the Bundesanstalt für Materialforschung und –prüfung (BAM), the Fritz-Haber-Institut der Max-Planck-Gesellschaft (FHI), the Fraunhofer-Institut für Angewandte Polymerforschung (IAP) and the Institut für Chemie der GKSS, Abteilung für Membranforschung, were involved in the Graduiertenkolleg. 19 professors of polymer science, all of them members of the Berlin-Brandenburgischer Verband für Polymerforschung e.V. (BVP) were engaged as PhD supervisors as well as lecturers, including G.W. Becker (BAM), L. Brehmer (UP), W. Bruns (TUB), R. Gerhard-Multhaupt (UP), A. Hampe (BAM), S. Hess (TUB), W. Jaeger (IAP), H. Käufer (TUB), G. Koßmehl (FUB), D. Paul (GKSS), J.P. Rabe (HUB), G. Rafler (IAP), A.-D. Schlüter (FUB), W. Schnabel (HMI), H. Sotobayashi (FHI), J. Springer (TUB), and M.H. Wagner (TUB). The Graduiertenkolleg was headed by G. Hinrichsen (TUB) 1992 – 1999 and K.-H. Reichert (TUB) since 1999.

Multidisciplinary knowledge was conveyed to the students by a series of lectures („Ringvorlesung“) presented by the professors of the Graduiertenkolleg, in which insights into the state of art of polymeric research and science were given by demonstrating the results of selected and actual research projects of various special fields, such as: synthesis and degradation of macromolecules; polymerization technology; physical chemistry of polymers; vicoelasticity; computer simulation; testing methods; and failure mechanisms of polymeric materials. The lecture program was completed by special courses resulting from the curricula of the participating universities, which could be chosen by each student in an individual manner. In the obligatory weekly seminar the students reported on the progress of their work and discussed the results with their colleagues and supervisors. This seminar also offered the possibility to invite famous guests from Germany and abroad to present a lecture and to discuss the scientific findings with the students. Altogether, more than 110 guest scientists from more than 20 countries visited the Graduiertenkolleg and presented such a lecture.

As a consequence of the heterogeneous character of the Graduiertenkolleg Polymerwerkstoffe and the interdisciplinary composition of the participating students and supervisors (chemists, physicists and engineers) a great variety of topics, subjects and methods was achieved by the PhD students. They covered the theory of polymers, in particular treated by the method of computer simulation, questions concerning the polymerization reaction kinetics as well as the design and control of polymerization reactors, synthesis and and characterization of polymers and polymeric compounds, preparation of membranes, application of polymers in technical systems, and testing of polymeric materials. 62 PhD degrees were granted to the students of the Graduiertenkolleg in the period from 1994 until 2002, while another 10 PhD graduations are still pending.

The Graduiertenkolleg Polymerwertkstoffe was supported by the DFG by more than 2 Mio EURO for scholarships, scientific equipment, computers, travel allowances, and invitation of guest scientists. This generous support is greatfully acknowledged.

G. Hinrichsen

50. Mitgliederversammlung des Berlin-Brandenburgischen Verbandes für Polymerforschung e.V. (BVP) am 15.02.2003

Am 13.10.1986 treffen sich im Sitzungssaal des Präsidenten der Bundesanstalt für Materialprüfung (BAM) 14 Polymerwissenschaftler aus den Berliner Universitäten und Forschungsinstituten zur Gründungsversammlung des „Berliner Verbandes für Polymerforschung“. Gründungsmitglieder sind die Professoren G.W. Becker (BAM), W. Bruns (TUB), H. Feuerberg (BAM), G. Hinrichsen (TUB), R. Hosemann (FHI), H. Käufer (TUB), G. Koßmehl (FUB), G. Manecke (FUB), G. Pastuska (BAM), K.-H. Reichert (TUB), W. Schnabel (HMI), H. Sotobayashi (FHI), J. Springer (TUB) und K. Ueberreiter (FHI). Zum Vorsitzenden wird G.W. Becker, zu stellvertretenden Vorsitzenden werden G. Koßmehl und J. Springer und zum Geschäftsführer wird G. Hinrichsen gewählt. Der Verband wird am 22.04.1987 vom Amtsgericht Charlottenburg in das Vereinsregister eingetragen; das Finanzamt für Körperschaften erkennt ihm die Gemeinnützigkeit zu.

Ziele des Verbandes sind die Intensivierung der Zusammenarbeit zwischen den in Berlin (heute: Berlin und Brandenburg) auf dem Gebiet der Polymerforschung tätigen Arbeitsgruppen durch die Veranstaltung fachspezifischer Vorträge, Seminare und Tagungen sowie die Koordinierung gemeinsamer Vorhaben zur Erforschung der Herstellung, des Aufbaus, der Eigenschaften und der Anwendung makromolekularer Stoffe. Ferner fördert der Verband die Zusammenarbeit der Arbeitsgruppen mit wirtschaftlichen Unternehmen. Ein zentrales Anliegen des Verbandes stellt die Betreuung und Förderung des wissenschaftlichen Nachwuchses dar.

Die erste gemeinsame Aktion des neu gegründeten Verbandes besteht in einer Präsentationsveranstaltung am 21.05.1987 im Institut für Technische Chemie der TUB, auf der sich alle Arbeitsgruppen der interessierten Öffentlichkeit vorstellten; 150 Besucher bilden eine überzeugende Kulisse. Am 01.02.1988 findet der „Berliner Perlontag“ statt, der zu Ehren des kurz zuvor verstorbenen Erfinders des Perlons und korrespondierenden BVP-Mitglieds, Prof. Dr. Paul Schlack, veranstaltet wird und an die 50-jährige Erfolgsgeschichte des Perlons erinnert. Im Oktober 1988 übernimmt der BVP die Organisation der „3. Berliner Polymerentage“, deren beide Vorgängerveranstaltungen in den Jahren 1982 und 1985 stattgefunden hatten. Die Reihe der „Berliner Polymerentage“ wird unter regelmäßigem Wechsel des Veranstaltungsortes in den folgenden Jahren erfolgreich fortgesetzt; im Herbst 2002 finden unter neuem und zeitgemäßem Namen die „Polydays 2002“ (8. Berliner Polymerentage) an der TUB statt. Darüber hinaus wird jeweils im Sommer- und Wintersemester das „Berliner Polymeren-Colloquium“ mit Vorträgen auswärtiger Gastredner durchgeführt.

Auf der 9. Sitzung des Verbandes am 04.07.1988 wird angeregt, die Kontakte mit den Kollegen aus dem Ost-Berliner Raum zu intensivieren und zu gegenseitigen Vortragseinladungen zu gelangen. Das Protokoll der Sitzung vermerkt: „Für ein „deutsch-deutsches Polymertreffen“ in Berlin wird die Zeit als noch nicht reif erachtet“. Die rasche geschichtliche Entwicklung in den Jahren 1989/90 überholt die Vorstellungen des BVP: Auf der Präsentationsveranstaltung am 17.05.1990 befinden sich unter den 160 Teilnehmern bereits ca. 40 Kollegen aus Ost-Berlin und Teltow.

Auf der 17. Sitzung am 15.02.1991 wird die Aufnahme der Professoren B. Philipp und G. Reinisch als Ordentliche Mitglieder beschlossen.
Zum Zeitpunkt der 50. Mitgliederversammlung des BVP hat dieser 36 Ordentliche Mitglieder, darunter 9 im Ruhestand befindliche; von den 27 aktiven Mitgliedern arbeiten 13 an Berliner Universitäten und Instituten und 14 an Brandenburgischen.

Zur Förderung des wissenschaftlichen Nachwuchses wird an der TUB das Graduiertenkolleg „Polymerwerkstoffe“ eingerichtet, das am 01.04.1992 seine Arbeit aufnimmt und von der Deutschen Forschungsgemeinschaft finanziell getragen wird. Die Kollegiatinnen und Kollegiaten stammen von allen drei Berliner Universitäten und der Universität Potsdam, ebenso die das Kolleg tragenden Hochschullehrer verstärkt um zahlreiche Kollegen aus außeruniversitären Instituten. Von 1994 bis 2002 schließen 62 Kiollegiatinnen und Kollegiaten ihre Doktorarbeit erfolgreich ab. 1999 läuft der Masterstudiengang „Polymer Science“ an, der wiederum alle vier Berlin-Brandenburgischen Universitäten vereint. Zur Zeit befindet sich ein weiteres Internationales Graduiertenkolleg Berlin/Potsdam/Lodz mit dem vorläufigen Arbeitstitel „Functional Polymer Composites“ im Antragsverfahren.

1993 beschließt die Mitgliederversammlung die Überarbeitung ihrer Satzung, um den veränderten politischen Gegebenheiten Rechnung zu tragen. Nach einer Übergangslösung, bei der der Ortsbegriff „Berlin“ durch „Berlin und seine Umgebung“ ersetzt wird, erfolgt 1999 die Umbenennung des Verbandes in „Berlin-Brandenburgischer Verband für Polymerforschung“. Auf der 31. Sitzung des BVP am 17.11.1995 wird mit der Diskussion über das Memorandum „Zur Situation der Polymerwissenschaften an den Berliner Universitäten und der Universität Potsdam“ begonnen, das eine Arbeitsgruppe jüngerer Kollegen (A.-D. Schlüter (FUB), J.P. Rabe (HUB), R. Gerhard-Multhaupt (UP)) federführend vorantreibt. Das Memorandum wird anlässlich der 6. Berliner Polymerentage im Jahre 1997 der Öffentlichkeit vorgestellt und den politisch verantwortlichen Personen und Gremien in Berlin und Brandenburg zugeleitet. Die Reaktionen aus dem politischen Raum auf die Zukunftsvorstellungen, die eine dauerhafte Verankerung der Polymerwissenschaften an den vier Universitäten vorsehen, sind äußerst positiv.

Im Jahre 2002 kann der Berlin-Brandenburgische Verband für Polymerforschung auf eine 15-jährige erfolgreiche Verbandstätigkeit zurückblicken. Seit seiner Gründung im Jahr 1987 sind an den vier Universitäten der Region 320 Promotionen und 340 Diplomexamina im Bereich der Makromolekularen Chemie, der Polymerphysik und der Kunststoff-Ingenieurtechnik erfolgreich abgeschlossen worden. Zahlreiche gemeinsame Forschungsprojekte sind bearbeitet worden, mehrere Sonderforschungsbereiche der DFG („Anisotrope Fluide“; „Mesoskopisch strukturierte Verbundsysteme“; „Elementar-Reibereignisse“) sind unter maßgeblicher Beteiligung von Mitgliedern des BVP in das Leben gerufen worden, der internationale Studiengang „Polymer Science“ erfreut sich großer Nachfrage und exzellente Nachwuchswissenschaftler nehmen Rufe auf die aus Altersgründen frei werdenden Lehrstühle an den Universitäten und Leitungspositionen in den Forschungsinstituten an. Dem Vorstand des Berlin-Brandenburgischen Verbandes für Polymerforschung mit dem Vorsitzenden J.P. Rabe und dem Geschäftsführer R. Gerhard-Multhaupt sei für die kommenden Jahre eine glückliche Hand gewünscht!

G. Hinrichsen

Guest Lectures (Berliner Polymeren-Colloquium)

2002-01-03	Prof. Dr. Wulf **Possart**, Universität des Saarlandes, Saarbrücken Polymere und Werkstoffwissenschaften: Strukturforschung-Polymere-Grenzschichten BAM Berlin
2002-02-06	Priv.-Doz. Dr. Wolfgang **Brütting**, Universität Bayreuth, Experimentalphysik II Organische Halbleiter als neue Materialien für die Optoelektronik Universität Potsdam
2002-02-27	Dr. Christoph **Brabec**, Siemens AG Corporate Technology, Erlangen Funktionsprinzipien und Materialanforderungen von Polymer-Solarzellen Universität Potsdam
2002-05-29	Prof. E.G. **Bortchagovsky** (Institute of Semiconductor Physics, Kiev) Ellipsometry and Ellipsometric Approach to Near-Field Microscopy Universität Potsdam
2002-06-12	Dr. A.A. **Mamedov** (Chemistry Department, Oklahoma State University, Stillwater, U.S.A.) Layer-by-Layer Assembled Thin Films of Nanocolloids Universität Potsdam
2002-10-16	Prof. St. **Nespurek/**Dr. G. **Wang** (Institute of Macromolecular Chemistry, Czech Academy of Sciences, Prague) Single Molecules Switch Based on Electron-Dipole Interaction Universität Potsdam
2002-11-27	Dr. T. **Vuorinen**/C. **Rouhento** (Tampere University, Finland) Introduction of the Tampere University of Technology, Research Topics, Systems and Methods Universität Potsdam
2002-11-27	Dr. V. **Bochenkov** (Department of Chemistry, Moscow State University) Nano-Particle: Electrical Properties at Low T-Deposition Universität Potsdam
2002-12-11	Prof. I. **Muzikante** (Institute of Physical Energetics, Riga) New Studies of Azo Materials Universität Potsdam

Conferences and workshops

Training course: "Thin organic Films"

Date:	25. February-01. March 2002
Place:	University of Potsdam
Organizer:	- Condensed Matter Physics, Institute of Physik (L. Brehmer, J. Reiche) - Interdisciplinary Research Centre *„Thin Organic and Biochemical Films"* (B. Schulz) - in Cooperation with GKSS Teltow, MPI-KGF and FhG-IAP Golm
Participants:	17 students/Ph.D. students
Topics:	One week training course for students and PhD-students in the field of fundamentals of the preparation and characterisation of thin film layers and architectures.

6th European Conference on Rheology

Date:	01.-06. September 2002
Place:	Universität Erlangen-Nürnberg
Organizer:	H. Münstedt (Erlangen), W. Mielke (Berlin), M.H. Wagner (Berlin)
Participants:	350

Start up-EUROFET-Meeting

Date:	26.-27. September 2002
Place:	University of Potsdam
Organizer:	- Condensed Matter Physics, Institute of Physik (S. Schrader, L. Brehmer)
Participants:	29 scientists
Topics:	Organised Molecular Films and Their Use for Field-Effect Transistors and Related Opto-Electronic Devices

Polydays 2002

Date:	30. September-2. October 2002
Place:	TU Berlin
Organizer:	BVP
Participants:	212

New Products for New Markets - New materials and their application in information technology and sensors

Date:	15. October 2002
Place:	Industrie- und Handelskammer Potsdam
Organizer:	Interdisciplinary Research Centre Thin Organic and Biochemical Films and Centre for Innovative Materials (B. Schulz and L. Brehmer)
Participants:	50 participants from academic and industrial institutions

Biochip Potsdam 2002 – Biosensors and Biochips

Date:	30. October 2002
Chaired by:	BioHytec e.V. and PITT UP; co-chaired by B. Schulz, Interdisciplinary Research Centre Thin Organic and Biochemical Films and Centre for Innovative Materials
Participants	100 from academic and industrial institutions

Sonstiges

Die Mitgliederversammlung des **Kunststoff-Museums-Verein** hat am 21. November 2002 in Düsseldorf auf Antrag von H. Käufer beschlossen, dass das Deutsche Kunststoff Museum zu einer Wanderausstellung wird. Als erster Ort wurde Berlin, Fontane-Haus ausgewählt. Dort wird sie unter dem Namen „Kunststoffmacher“ Mitte April 2003 eröffnet. Die Ausstellung in Düsseldorf wird zeitweilig geschlossen.

Scientific Activities of the Regular Members

Publications

Some members of the BVP (being head of institutes or departments) are responsible for a large number of independently working scientists. Only those papers are cited here to which they have individually contributed.

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V. Schulze, M.H. Wagner, H.-J. Radusch, A. Wutzler, R. Petrmichl, L. Arango
Automotive carpet thermoforming – simulation of carpet design and optimisation of the manufacturing process,
PPS-18, Guimaraes, Portugal, 15. – 20. Juni 2002

M. Schwarze, M. Schroeter, H. Borcherding, J. Frahn, H.G. Hicke, H.H. Schwarz, D. Paul, R. Schomäcker
Aminofunktionalisierte, GMA-gepfropfte PAN-Membranen zur Aroma/Aliphaten-Trennung
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B. Seifert, F. Fey-Lamprecht, T. Groth, W. Albrecht, G. Malsch, D. Paul, U. Gross
Development of membranes for application in a bioartificial kidney
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P.S. Smertenko, O.P. Dimitriev, L. Brehmer, S. Scharder
Formation and current-voltage characteristics of the polyaniline: EuCl3 complex
81. Bunsenkolloquium, Dresden, 21.-23. Sept. 2002

K. Specht, A.K. Bledzki, H.-P. Fink, R. Kleinholz
Structural Optimized Natural Fibre/PP Composites for Automotive Interiors
4th Int. Wood and Natural Fibre Composites Symp., Kassel, 10. – 11. Apr. 2002

I. Stankovic, S. Hess, M. Kröger
Embedded atom model foams studied via nonequilibrium molecular dynamics simulation
5th Liquid matter conference, Konstanz, 16. Sept. 2002

J. Stephan, S. Novikov, A. Buchsteiner, L. Brehmer
Influence of electrode morphology on charge carrier injection and transport in organic devices
Engelberg, Schweiz European Optical Society (EOS) Topical Meeting, Organic Optoelectronics: Technology and Devices, 25.-26. März 2003

L. Stephan, S. Novikov, A. Buchsteiner, L. Brehmer
Influence of electrode morphology on charge carrier injection and transport in organic devices
DPG-Frühjahrestagung, Regensburg, 11.-15. März 2002

B. Stiller, P. Karageorgiev, A. Buchsteiner, Th. Geue, O. Henneberg, L. Brehmer, A. Nathanson, O. Hollricher
Optically induced mass transport generated in near-fields
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B. Stiller, P. Karageorgiev, L. Brehmer
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8. VEECO User Meeting (Digital Instruments/ThermoMicroscopes/Hysitron), Saarbrücken, 20.-21. März 2002

G.A. Sukach, V. Svechniko, P.S. Smertenko, L. Brehmer, S. Schrader, N.F.Guba, L.N. Grebinska
Peculiarities of optic characteristics of PEPC and Br-PEPC doped by vanadium oxide
81. Bunsenkolloquium, Dresden, Sept. 2002

J. Thome, A. Holländer, W. Jaeger, I. Trick, C. Oehr
Ultrathin Antibacterterial Polyammonium Coatings on Polymer Surfaces
8th Int. Conf. on Plasma Surface Engineering, Garmisch-Partenkirchen, 9.-13. Sept. 2002

G. Turky, A. Schönhals
Dielectric investigations of photochromic copolymers with azobenzene moieties in the side group
Workshop Glasübergang im Sonderforschungsbereich Heterogene Polymersysteme der Universität Halle, Rostock, 16.-18. Dez. 2002

M.H. Wagner
Zur Dehnverfestigung von linearen und verzweigten Polymerschmelzen,
GVC-Fachausschuss Rheologie, Bad Boll, 13. – 14. Feb. 2002

M.H. Wagner
The World is Shrinking-But is the Tube Diameter?
Institute of Theoretical Physics (ITP), Santa Barbara, USA, 5. Apr.-8. Mai 2002

M.H. Wagner
Entanglement-Dominated Rubber Models
Institute of Theoretical Physics (ITP), Santa Barbara, USA, 5. Apr.-8. Mai 2002

M.H. Wagner
Strain energy functions for long-chain branched polymer melts,
3rd Int. conf. on dynamics of polymeric liquids, Capri, Italy, 26.-29. Mai 2002

M.H. Wagner
Extensional flows of polymer melts: From molecular structure to strain energy and strain hardening,
PPS-18, Guimaraes, Portugal, 16.-20. Juni 2002

M.H. Wagner
A new strain energy function for strain hardening long-chain branched polymer melts
6th European Conf. Rheol., Erlangen, 1.-6. Sept. 2002

M.H. Wagner
Extensional flow of polymer melts: from molecular structure to strain energy and strain hardening
Polydays 2002, Berlin, 30. Sept.-2. Okt. 2002

M.H. Wagner
Constitutive equations for linear and long-chain branched polymer melts
37e Colloque Annuel du Groupe Français de Rhéologie, Saint Etienne, France, 9.-11. Okt. 2002

G. Wang, St. Nespurek, J. Rakusan, M. Karaskova, F. Schauer, L. Brehmer
Polarized electroluminescence from bilayer structures
9th Int. ERPOS Conf. Electrical and related properties of polymers and other organic solids, Prag, 15.-18. Juli 2002

St. Weidner, G. Kühn, J. Friedrich
MALDI-TOF MS of low-molecular polyethylene and waxes
49th ACS Sympos. on Mass Spectrometry, Chikago, USA, 25.-31. Mai 2002

P. Weigel, J. Ganster, H.-P. Fink
Cellulose Man-made Fibres for Reinforcing Injection Moulding Thermoplastics
4th Int. Wood and Natural Fibre Composites Symp., Kassel, 10.-11. Apr. 2002

P. Weigel, J. Ganster, H.-P. Fink
Polypropylene Short Fibre Composites Reinforced with Man-made Cellulose Fibres
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P. Weigel, J. Ganster, H.-P. Fink
Toughness and Mechanical Performance of Short Fibre Composites from Cellulosic Man-made Fibres and Polypropylene (Poster)
3rd ESIS TC4 Conf. on Polymers and Composites, Les Diablerets, 15.-18. Sept. 2002

N. Weitbrecht, M. Kratzat, S. Santoso, R. Schomäcker
Kinetik rhodiumkatalysierter Hydrierungen in mizellaren Lösungen
GVC/DECHEMA-Jahrestagung 2002, Wiesbaden, 11.-13. Juni 2002

N. Weitbrecht, M. Kratzat, S. Santoso, R. Schomäcker
Reaction kinetics of rhodium catalysed hydrogenerations in micellar solutions
4. Int. Symp. “Catalysis in Multiphase Reactors“, Lausanne, Schweiz, 22.-25. Sept. 2002

A. Zen, C. Bauer, U. Asawapirom, U. Scherf, R. Hagen, S. Kostromine, R. Mahrt, D. Neher
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X.H. Yang,S. Lucht,A. Zen,N. Mechau, U. Scherf, R.Hagen, T. Bieringer, S. Kostromine, D. Neher
Monodomain alignment of polyfluorene using ultrathin photoaddressable alignment layer
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X.H. Yang, T. Kietzke, F. Jaiser, D. Neher
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X.H. Yang,T. Kietzke,F. Jaiser, D. Neher, U. Scherf, S. Bagnich, H. Bassler
Polymer electrophosphorescent devices utilizing LPPP host
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A. Zen, XH Yang, C. Bauer, U. Asawapirom, U. Scherf, R. Hagen, S. Kostromine, R. Mahrt, D. Neher
Polarization-Sensitive Polymeric Photodiodes
EMRS-Spring Meeting**,** Organic Materials for Device Applications, Strasbourg, France, 20. Juni 2002

A. Zen, C. Bauer, U. Asawapirom, U. Scherf, R. Hagen, S. Kostromine, R. Mahrt, D. Neher
Polarization-Sensitive Polymeric Photodiodes
Gentner Symposium in Chemistry on Ascending the Materials Hierarchy, Potsdam, Germany, 21.-24. Apr. 2002

Diplomarbeiten

Camil Abdic (R. Schomäcker)
Entwicklung spektroskopischer Messmethoden zur Untersuchung der Katalyse mit geprägten Polymeren
Technische Universität Berlin

Jennifa Bahnemann (J. Koetz)
Nanopartikelbildung in Mikroemulsionen
Universität Potsdam

Abdel Benchekh (M.H. Wagner)
Konstruktion eines Adapters zur semikontinuierlichen Befüllung eines Kapillarrheometers durch einen Extruder und Aufnahme erster Fließkurven
Technische Universität Berlin

Yves Bodenthin (H. Möhwald)
Struktur dünner Filme aus metallo-supramolekularen Modulen
Universität Potsdam

Khader Gamal (M.H. Wagner)
Weiterentwicklung und Inbetriebnahme eines Prüfstandes für künstliche Hüftgelenkspfannen aus UHMWPE
Technische Universität Berlin

Jens Heide (R. Schomäcker)
Entwicklung eines Konzeptes zur Optimierung der Maßstabsübertragung von Dreiphasen-Reaktionen
Technische Universität Berlin

Sarah Höfl (G.H. Findenegg)
Eigenschaften neuer Copolymer-Mikrogele
Technische Universität Berlin

Gani Imeri (R. Schomäcker)
Untersuchungen zur Wachstumsgeschwindigkeit von Nanopartikeln
Technische Universität Berlin

Mulyadi S. Leo Iwan (M.H. Wagner)
Untersuchung der Alterung von gummierten Geweben von Luftfahrzeug-Notrutschen
Technische Universität Berlin

Edis Kasemi (A.D. Schlüter)
Synthesis of Novel Dendronized Polymers
Freie Universität Berlin

Patrick Kölsch (H. Möhwald)
Ionenverteilung an Grenzflächen
Universität Potsdam

Anja Kröger (P. Raabe, H.-P. Fink)
Molekulare Charakterisierung von Hydroxypropyl-Kartoffelstärke
Humboldt Universität-Berlin / Fraunhofer-IAP Golm

Florian Laurisch (R. Schomäcker)
Katalytische Hydrierung von 2-Acetamidozimtsäure mit einem optisch angeregten Rhodium-Katalysator
Technische Universität Berlin

Gordon Lucas (J. Koetz/M. Antonietti)
Charakterisierung von BaSO4 Partikeln hergestellt in Mikroemulsionströpfchen
Universität Potsdam

S. Nozari (M. Antonietti)
Joint Nucleation of Organic/Inorganic Nanoparticles
Universität Potsdam und MPI KG

Marian Patzlaff (R. Schomäcker)
Experimentelle Untersuchungen und Modellierung der Teilchengrößenverteilung während der Suspensionspolymerisation von Styrol
Technische Universität Berlin

Dirk Schubert (A.D. Schlüter)
Synthese von Dendrimeren mit Fluoreszenzsonden
Freie Universität Berlin

Axel Seebach (R. Schomäcker)
Untersuchung der Permeabilität von PAA-Membranen für verschiedene Gase
Technische Universität Berlin

Hary Soerijanto (R.Schomäcker)
Kinetische Untersuchungen zum Reforming von Methanol
Technische Universität Berlin

Joachim Stump (M.H. Wagner)
Konstruktion von Spritzgießwerkzeugen zur Herstellung von Prüfkörpern für die Untersuchung der mechanischen Eigenschaften polymerer Werkstoffe
Technische Universität Berlin

Faissal-Ali El-Toufaili (R. Schomäcker/O. Brüggemann)
Fast Screening of Molecularly Imprinted Polymers
Masterstudiengang Polymer Science
Technische Universität Berlin

Ulrike Voigt (G.H. Findenegg)
Herstellung und Charakterisierung von thermosensitiven Multischichten
Technische Universität Berlin

Armin von Holst (M.H. Wagner)
Konstruktion und Realisierung eines Kreislaufmodells für Untersuchungen an koronaren Stents
Technische Universität Berlin

Tobias Wehry (M.H. Wagner)
2D Simulation of Shear Testing Devices for Granular Materials with the Distinct Element Method
Technische Universität Berlin

Dissertationen

Michael Bartke (K.-H. Reichert)
Gasphasenpolymerisation von Butadien – Kinetische Untersuchungen im Minireaktor und Modellierung
Technische Universität Berlin

Matthias Beinhoff (A.D. Schlüter)
Synthese von Dendrimeren mit generationsspezifischen Fluoreszenzsonden
Freie Universität Berlin

Thilo Böhme (J.P. Rabe)
Selbstaggregation und elektronische Eigenschaften alkylsubstituierter, polyzyklischer aromatischer Kohlenwasserstoffe auf Graphit
Humboldt-Universität zu Berlin

Brunero Cappella (G. Hinrichsen, E. Schulz)
Dynamic Plowing Lithography und Kraft-Abstands-Kurven-Indentation als lithographische Methoden für die Modifizierung von Polymeroberflächen
Technische Universität Berlin und BAM

Reza Dabiri (G.H. Findenegg)
Untersuchungen zur Adsorption von nichtionischen Tensiden in mesoporösen Adsorptionsmitteln im Hinblick auf ihre Abtrennung aus Spülabwässern
Technische Universität Berlin

Bixia Ge (H. Möhwald)
Bioelectrochemical Detection of Radicals and Radical Scavengers
Universität Potsdam

Vanessa Gerstung (M. Hennecke, J. Friedrich)
Analytik von komplexen Polymeren mittels Feld-Fluß-Fraktionierung
Freie Universität Berlin und BAM

Olga Franco González (I. Orgzall, L. Brehmer)
Structural and Spectroscopical Study of Crystals of 1,3,4-Oxadiazole Derivatives at High Pressure
Universität Potsdam

Christian Grave (A.D. Schlüter)
A Set of Shape-Persistent Macrocycles with Terpyridine Units
Freie Universität Berlin

Lourdes Rodriguez Hernández (R. Schomäcker)
Stochastische Modellierung der Nanopartikelbildung in Mikroemulsion
Technische Universität Berlin

Paolo Imperia (S. Schrader, L. Brehmer)
Localised States in Organic Semiconductors and their Detection
Universität Potsdam

P. Kašparová (M. Antonietti)
Doppelthydrophile Blockcopolymere als Mineralisationstemplate
Universität Potsdam und MPI KG

V. Khrenov (M. Antonietti)
Anwendung der Heterophasen-Polymerisation und CeIV Chemie zur Syntese von Blockcopolymeren
Universität Potsdam und MPI KG

Branko Kolaric (G.H. Findenegg)
Foam Films Containing Polyelectrolytes of Different Molecular Architectures
Technische Universität Berlin

Emin Kumru (J. Springer)
Einfluss der Gassorption auf die Grenzflächenspannung von niedermolekularen und polymeren Flüssigkristallen mit cholesterischer Phase
Technische Universität Berlin

Constanze Lesser (H. Möhwald)
Lumineszierende Filme durch alternierende Adsorption von CdTe-Nanopartikeln und Polyelektrolyten
Universität Potsdam und MPI KG

Claudia Modrakowski (A.D. Schlüter)
Synthese von Dendrimeren mit generationsspezifischen eingebauten solvatochromen Fluoreszenzsonden
Freie Universität Berlin

Knut Morawetz (J. Reiche, L. Brehmer)
Untersuchungen zum Adsorptionsverhalten von Gegenionen an Langmuir-Filmen
Universität Potsdam

Wolf-Dietrich Neudorff (A.D. Schlüter)
Arbeiten zu Synthese und Eigenschaften gürtelförmiger Fluoranthene
Freie Universität Berlin

K. Padtberg (M. Antonietti)
On-line Verfolgung von Nukleierungsprozessen
Universität Potsdam und MPI KG

Alexander Reznicek (G. Hinrichsen, U. Gösele)
Elektrische und strukturelle Eigenschaften gebondeter Halbleiterstrukturen
Technische Universität Berlin

Gernot Rother (G.H. Findenegg)
Adsorption und Phasentrennung binärer flüssiger Mischungen in Porensystemen
Technische Universität Berlin

K. Sander (W. Jaeger, J. Springer)
Synthese und Charakterisierung neuartiger Polyampholyte und deren Wechselwirkungen mit Tensiden
Technische Universität Berlin und FhG-IAP Golm

Markus Schäfer (J. Springer)
Synthese und Charakterisierung radiopaker Dendrimere zur Anwendung in der Röntgendiagnostik
Technische Universität Berlin

J. H. Schattka (M. Antonietti)
Synthese poröser Metalloxidstrukturen dure Template Nanocoating
Universität Potsdam und MPI KG

Thomas Schimmel (J. Springer, W. Jaeger)
Synthese und Charakterisierung neuer Polycarbobetaine
Technische Universität Berlin und FhG-IAP Golm

Gregor Schinkel (R. Schomäcker)
Herstellung von Aluminiumoxidkeramiken über die Mikroemulsionsroute
Technische Universität Berlin

Marc Schneider (H. Möhwald)
Untersuchung von Wechselwirkungskräften und dem Adsorptionsverhalten von Polyelektrolytmolekülen auf Nanometer-Skala
Universität Potsdam und MPI KG

S. Schrage (M. Antonietti)
Selbstorganisation von Ionomeren zu phasenseparierten Vesikeln
Universität Potsdam und MPI KG

Andreas Schreiber (G.H. Findenegg)
Phasenverhalten reiner Stoffe in mesoporösen Silika-Materialien
Technische Universität Berlin

Bernd Schwarz (H. Möhwald)
NMR Spektroskopie an Polyelektrolyt Mono- und Multischicht-Systemen
Universität Potsdam und MPI KG

Daniel Seifert (H. Käufer)
Quantitative Analyse von Polyolefinblends zur Prozessregelung einer Recyclinganlage
Technische Universität Berlin

Paul Steffen (H. Möhwald)
Rheologie und Benetzung in Langmuir-Filmen auf der Mikrometerskala
Universität Potsdam und MPI KG

S. Viala (M. Antonietti)
Kontrolliert radikalische Heterophasenpolymerisation mit Anwensenheit des Diphenylethylens
Universität Potsdam und MPI KG

David Woo (H. Möhwald)
Untersuchungen zum Einfluss volatiler Anästhetika auf Modellmembranen mittels zeitaufgelöster Röntgenbeugung
Universität Potsdam und MPI KG

Changmei Zhang (A.D. Schlüter)
Suzuki Polycondensation: On the applicability to aryl dibromides with amphiphilic substituents and aryl dichlorides
Freie Universität Berlin

Bernhard D. Ziesche (H. Käufer)
Dimensionierung von großen Rechteckbehältern aus Thermoplasten
Technische Universität Berlin

A. Zintchenko (M. Antonietti)
Poyleketrolytkomplexbildung mit doppelthydrophilen Blockcopolymeren
Universität Potsdam und MPI KG

Habilitationen

K. Landfester
Miniemulsions for Polymerization Processes and Materials Science
Universität Potsdam und MPI KG

Patents

W. Albrecht, L. Dahms, K. Lützow, T. Weigel, R. Hilke, D. Paul
Funktionalisierte Polyimid-Formkörper und funktionalisierte Polyimid-Membranen
PCT/DE 02/00077, 12.01.2002

W. Albrecht, T. Groth, K. Lützow, B. Seifert, R. Hilke, D. Paul
Polyamid-Formkörper, insbesondere Polyimid-Membranen, Verfahren zu dessen bzw. deren Herstellung und die Verwendung der Polyimid-Membranen
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W. Albrecht, T. Weigel, H.-J. Ziegler, R. Hilke, D. Paul
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W. Albrecht, T. Weigel, T. Groth, B. Seifert, R. Hilke, D. Paul
Zweischicht-Hohlmembran für Bioreaktoranwendungne
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J. Gassan, R. Einsiedel, P. Weigel, H.-P. Fink
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AZ: PCT/EP02/11651, angemeldet 17.10. 2002

J. Gensrich, P. Weigel, E. Schaaf, H.-P. Fink, F. Loth:
Verfahren zur Herstellung von Cellulosecarbamatformkörpern
AZ: 102 23 174.5, Anmeldetag 24.5. 2002

R. Hilke, W. Albrecht, T. Weigel, T. Groth, D. Paul
Membrankörper sowieVerfahren zur Herstellung derselben
PCT/DE 02/02796, 31.07.2002

H. Käufer, H.P. Seijo-Bollin
Verfahren für das Recycling von Epoxidharz enthaltenden Erzeugnissen
EP 080 1662

H. Käufer, H. Hendricks, A. Thiele, O. von Quast
Verfahren zum Recycling von Mischungen u./ oder verbinden von Kunststoffen untereinander u./ oder mit anderen Werkstoffen mit Lösemittelverfahren
DE 4323320 A1

H. Käufer
Isolierglasfenster mit formschlüssigen verbundenen Rahmen
DE 10004825 A1

H. Käufer, Th. Glandorf
Fertigungsintegrierte mechanische Prüfung
DE 10044519 A1

H. Käufer, D. Seifert, P. Seligmann
Kalorimetrische Messungen zur laufenden Kontrolle und Prozessregelung von Lösungsverfahren
DE 10054856 A1

P. Karageorgiev, B. Stiller und L. Brehmer
Optisch induzierter Transport von Nanoobjekten / Materie mit einer Auflösung im Nanometerbereich
(angemeldet Dezember 2002)

P. Karageorgiev und B. Stiller, L. Brehmer
Optisch induzierte Oberflächenmodifizierung im Nanometerbereich
DE 100 24 059

K. Landfester, U. Scherf, D. Neher, M. Antonietti
Nanostrukturierte Schichten aus Nanopartikeln organischer Halbleiter (NOH)
Deutsche Patentanmeldung Appl. 10161326.1 (2002)

F. Loth, E. Schaaf, H.-P. Fink, J. Kunze, J. Gensrich:
Verfahren zur Herstellung von Cellulosecarbamat in einem inerten organischen Reaktionsmedium
AZ: 102 53 672.4, Anmeldetag 18.11. 2002

F. Loth, E. Schaaf, P. Weigel, H.-P. Fink, J. Gensrich:
Verfahren zur Herstellung von Cellulosecarbamat
AZ: 102 23 171.0, Anmeldetag 24.5. 2002

T. Miteva, G. Nelles, A. Yasuda, A. Meisel, D. Neher
Aligned emissive polymer blends, films and devices based thereon
European Patent, Appl. 01 121 177.8-2102 (2001)
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K.-H. Reichert, A. Wittebrock, K. Kallio, E. van Praet
Method for Reactivating Deactivated Co-Ordination Catalysts and a Device for Carrying Out Said Method
WO 02/098934 A1

K.-H.Reichert, A. Wittebrock, K. Kallio
Copolymers of SG(A)-Olefins and of Functional Monomers. Their Production and the Use Thereof
WO 02/098935 A1, 12.12.2002

S. Schrader, P. Neumann, L. Brehmer, U. Schülke, M. Kant
Lichtemittierende Vorrichtung und Verfahren zu ihrer Herstellung
DE 101 32 329.8

P. Weigel, F. Loth, H.-P. Fink:
Verfahren zur Herstellung von Cellulosecarbamat mittels reaktiver Extrusion
AZ: 102 23 172.9, Anmeldetag 24.05.2002

F. Wiese, Q. Huang, B. Seibig, D. Paul
Verfahren zur Herstellung geschäumter Polymerformkörper
AZ. 102 20 038.6, 04.05.2002

Awards

W. Albrecht
Internationaler Schwarzer Lyocellpreis des thüringischen Textil- und Kunststoffinstituts Rudolstadt 2002

Hans-Peter Fink
Dr. Edmund-Thiele-Denkmünze des Vereins der Zellstoff- und Papier-Chemiker und -Ingenieure (ZELLCHEMING) für wissenschaftliche Arbeiten zur physikalischen Struktur der Cellulose und ihrer Veränderung bei Verarbeitungsprozessen

Hans-Peter Fink
Jisuke-Hayashi-Award of the Cellulose Society of Japan
for “Pioneering Studies on Crystal Structure and Mercerization Mechanism of Cellulose and Developments of New Cellulosic Materials”

Helmuth Möhwald
Lectureship Award of the Japanese Colloid Society, Sendai

Helmuth Möhwald
Founder’s Lecture, London

Helmuth Möhwald
Eli Burstein Lecture, Philadelphia

Dieter Paul
Bundesverdienstkreuz 1. Klasse

Burkhard Schulz, M. Schirmer
First Prize, Technology Transfer Award 2002 of the Technology Foundation Brandenburg for innovative:
“Thermostable resists for microsystem technology”

Manfred. H. Wagner
The Swinburne Award 2002 of the Institute of Materials, London, in recognition of his outstanding contribution to the advancement of the science, engineering and technology of polymeric materials

Manfred. H. Wagner
The East China University of Science and Technology awarded the title of “Guest Professor”

Lehrveranstaltungen

Some lectures were held as part of the Master of Science in Polymer Science curriculum of the FU Berlin, HU Berlin, TU Berlin, and U Potsdam. They are indicated by MSPS

Technische Universität Berlin

Sommersemester 2002

Methoden der Polymeranalytik 1 V	Friedrich
Einführung in die Theoretische Physik I 2 V, 4 UE	Hess
Statistische Physik I 2 UE	Hess
Simulationsverfahren in der Statistischen Physik 2 V	Hess
Theorie der Transportvorgänge 2 V	Hess
Theoretische Physik 3 UE	Hess
Theoretische Physik 2 SE	Hess
Kolloquium des Sfb 448 « Mesoskopisch strukturierte Verbundssysteme 2 SE	Hess
Rheologie der Polymerschmelzen I 2 V, 2 PR	Wagner
Kunststoffverarbeitung II 2 V, 4 PR	Wagner Rautenberg
Konstruieren mit Kunststoffen II 2 V, 2 UE	Wagner Wache
Kunststoffe im Bauwesen 2 V, 2 PR	Rautenberg
Rechnergestützte Entwicklung und Konstruktion von Kunststoffprodukten II 2 V, 2 UE	Bolst John
Kunststoffrecycling 2 V	Wagner Tartakowska
Polymerphysik II 2 V, 2 PR	Springer

Physikalische Eigenschaften der Kunststoffe 2 V, 1,5 UE + PR	Springer Wagner
Statische und dynamische Simulationstechniken in der Polymerphysik 2 V	Hofmann
Polymerwissenschaftliches Seminar 2 SE	Wagner Rautenberg Springer
Reaktionstechnik 2 V, 1 SE; PR n. V.	Schomäcker
Technische Chemie 2 CO ; WA ; Exkursion	Schomäcker
Polymerization Technology (MSPS) Integrated Course Polymerization Technology, Lab Cours 3 V	Reichert
Surface Science of Polymers 2 V + 2 UE	Findenegg v. Klitzing Uredat
Wintersemester 2002 / 2003	
Statistische Physik II 2 UE	Hess
Theorie der Transportvorgänge 2 SE	Hess
Theoretische Physik 3 UE	Hess
Theoretische Physik 2 UE	Hess
Kolloquium des Sfb 448 „Mesoskopisch strukturierte Verbundsysteme 2 SE	Hess
Herstellung, Verarbeitung und Anwendung der Kunststoffe 2 V, 1 UE + PR	Wagner H. Springer
Rheologie der Polymerschmelzen II 2 V, 2 UE	Wagner
Kunststoffverarbeitung I 2 V, 4 PR	Wagner Rautenberg

Rechnergestützte Entwicklung und Konstruktion von Kunststoffprodukten I 2 V, 2 UE	Bolst John
Konstruieren mit Kunststoffen I 2 V, 2 UE	Simonsohn Wache
Thermische Untersuchungen an Polymeren 2 V	Springer
Current Topics of Colloid and Interface Science 2 V	Findenegg Hellweg v. Klitzing

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Sommersemester 2002

Introduction to Macromolecular Chemistry (MSPS) 2 V	Schlüter
Basic Polymer Synthesis (MSPS) 3 V	Schlüter
Physical Chemistry of Polymers (MSPS) 1 V	Hennecke
Physikalische Chemie der Polymere I 1 V	Hennecke

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Physikalische Chemie der Polymere II 1 V	Hennecke Schartel

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Sommersemester 2002

Kolloidchemie II 2 V	Koetz
Kolloidchemie II 1 SE	Kosmella
Polymerchemie I 2 V	Scherf
Strukturbildung in kolloidalen Systemen 2 V	Koetz Antonietti
Physikalische Chemie der Grenzflächen 2 V	Koetz Vollhard
Spezialpraktikum PR (4 Wochen)	Koetz Kosmella
Angewandte Polymerchemie 2 V	Scher Buller
Moderne Methoden der Polymersynthese 2 V	Scherf Antonietti
Biophysics of Membranes and Cells 2 V	Möhwald Sukhorukov
Moderne Methoden der Charakterisierung von Grenzflächen und Kolloiden 2 S	Möhwald Schönhoff Motschmann
Polymerchemie I 2 V	Antonietti
Strukturbildung in kolloidalen Systemen 2 V	Kötz Antonietti
Colloidal Phenomena 2 V	Kötz Antonietti
Polymers as high-tech materials 2 V	Schulz
Membranes and Separation Processes (MSPS) 1 V	Paul

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Functionalized organic layers and interfaces 2V	Schulz
Course of lectures Nano-Sciences for PhD-students in Biology, Chemistry and Physics	Schulz Brehmer

Projektlabor: „Dünne organische Schichten“ 1 V+SE	Reiche Brehmer
Dünne Schichten und Grenzflächen – Herstellung und Charakterisierung 2 V	Reiche Brehmer
Nichtlineare optische Eigenschaften organischer Materialien I 2 V	Schrader Brehmer
Oberseminar: Nanophysik-Organische Grenzflächen und dünne Schichten 2 SE	Brehmer
Doktorandenseminar: Nanophysik 2 SE	Brehmer
Optical Spectroscopy and Photonics II 2V	Neher
Physical and Engineering Properties of Polymers (MSPS) 4V, 2 UE, 2S	Gerhard-Multhaupt Neher
Electrical and Optical Properties Laboratory (MSPS) 4 P	Lucht Gebert Frübing Mellinger Wegener
Festkörperphysik II 2 S, 1 UE	Gerhard-Multhaupt
Kolloidchemie I 2 V	Koetz
Kolloidchemie I 1 SE	Kosmella
Polymerchemie II 2 V	Antonietti
Moderne Aspekte der Kolloidforschung 2 V	Koetz Antonietti
Spezielle Aspekte der Polymersynthese 2 V	Laschewsky
Physikalische Chemie zweidimensionaler Systeme 2 V	Möhwald
Technische Chemie I 2 V	Laschewsky
Praktikum zur Kolloidchemie I und II	Koetz Kosmella Tiersch
Physikalische Chemie III 2 V, 2 UE	Möhwald Kurth Schönhoff

Physikalische Chemie zweidimensionaler Systeme 2 V	Möhwald
Moderne Methoden der Charakterisierung von Grenzflächen und Kolloiden 2 S	Möhwald Schönhoff Motschmann
Polymerchemie II 2 V	Antonietti
Moderne Aspekte der Kolloidforschung 2 V	Kötz Antonietti
Supramolecular Chemistry (MSPS) 2 V	Antonietti
Promotions-Kolleg "Nano-Science" 2 V	Brehmer
Projektlabor: Dünne organische Schichten 1 V+SE	Reiche/ Brehmer
Nichtlineare optische Eigenschaften organischer Materialien II 2 V	Schrader Brehmer
Oberseminar: Nanophysik-Organische Grenzflächen und dünne Schichten 2 SE	Brehmer
Doktorandenseminar: Nanophysik	Brehmer
Seminar zur Experimentalphysik 2 S	Gerhard-Multhaupt
Materialwissenschaft I - Metalle, Keramiken, Gläser 2 V	Gerhard-Multhaupt

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Struktur der Materie (a): Atom- und Molekülphysik 4 V	J.P. Rabe
Kolloquium zur Makromolekül- und Vielteilchenphysik 2 SE	Rabe Röder Sokolov Schimansky-Geyer

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Physik von Makromolekülen 2 V, 2 SE	Rabe
Polymer Characterization (MSPS) 4 V 2 SE 8 P	Rabe Kirstein Gössl Jäckel Severin
Introduction to Polymer Physics 4 V 2 SE	Sokolov Kirstein
Struktur der Materie (a): Atom- und Molekülphysik 4 VL 2 SE	Rabe Gössl Balzer
Biophysik im Überblick 2 V	Hermann Rabe u.a.
Kolloquium zur Makromolekül- und Vielteilchenphysik 2 SE	Rabe Röder Sokolov Schimansky Geyer