



FUNDING REPORT

**INFORMATION.  
COMMUNICATION.  
INNOVATION.**

2009-2013



**BEILSTEIN INSTITUT**

# HISTORY

## BEILSTEIN-INSTITUT

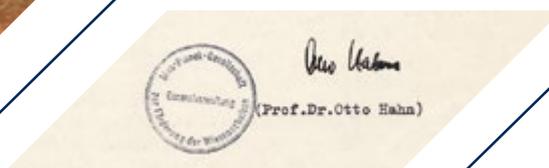
**1881**

First edition of the Beilstein Handbook - Volume 1 + 2 by Friedrich Konrad Beilstein



**1951**

The "Beilstein Institute for Literature of Organic Chemistry" is established as a foundation on June 25, by the Max Planck Society whose President Otto Hahn signs the first constitution



**2002**

The first Beilstein TV is set up at the Max Planck Society in Frankfurt am Main by Dr. Gisbert Schneider

**1981**

Celebrations to mark the 100th anniversary of the Beilstein Handbook

**1988**

The database version of the Beilstein Handbook goes online at STN

**1998**

Production of the Beilstein Handbook as a book is discontinued after 503 volumes with 440,814 pages

**2005**

Launch of the first Beilstein Open Access Journal: the Beilstein Journal of Organic Chemistry



**BEILSTEIN JOURNAL**  
OF ORGANIC CHEMISTRY

**2007**

End of the database production

**2009**

Start of the collaborative research project NanoBiC

**2010**

Beilstein TV is launched



**BEILSTEIN T**

**1999**

The constitution of the foundation and its tasks and responsibilities are redefined

Beilstein endowed chair at Goethe University Frankfurt and awarded to Dr. Frank Schulz

**2009**

The second Beilstein endowed chair is set up at the TU Dortmund University and awarded to Dr. Frank Schulz



**2010**

The second Beilstein Journal is launched: the Beilstein Journal of Nanotechnology



launched

**2011**

Support of the Hessian Student Academy for Middle Schools at Burg Fürsteneck



**2012**

Start of the Beilstein Scholarship Program with the award of 15 scholarships



## Verfassung

### § 1

Die Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.V.  
errichtet unter dem Namen:

"Beilstein-Institut für Literatur der organischen Chemie,  
rechtsfähige Stiftung "

eine rechtsfähige Stiftung des bürgerlichen Rechts.

Zweck der Stiftung ist die ausschliessliche und unmittelbare  
Förderung der chemischen Wissenschaften insbesondere durch die  
Fortführung der Herausgabe des Beilstein-Handbuches der orga-  
nischen Chemie und der damit zusammenhängenden wissenschaftli-  
chen Schriften.

Der Sitz der Stiftung ist Frankfurt am Main.

Das Geschäftsjahr ist das Kalenderjahr.

### § 2

Das Stiftungsvermögen besteht aus:

- a) einem Betrage von DM 1.000,-, den die Max-Planck-Gesell-  
schaft zur Erreichung des genannten Zweckes aussetzt,



*Otto Hahn*

(Prof. Dr. Otto Hahn)

Excerpt from the original constitution of 1951.

# BEILSTEIN EDITING SCIENCE

The Beilstein-Institut was founded in 1951 as “Beilstein-Institut für Literatur der organischen Chemie” (Beilstein-Institut for literature of organic chemistry) as a non-profit foundation. “The purpose of the foundation is exclusively and directly the promotion of the chemical sciences, in particular by continuing the publication of the Handbook of Organic Chemistry and related scientific articles.” (Excerpt from the original constitution of 1951).

The foundation continues to follow this purpose with the publication of the scientific articles in its journals. Technical advances, such as the internet, provide a publishing and distribution infrastructure, allowing us to operate independently of a publishing house. Today the Beilstein editorial staff is embedded in a global scientific network of experts. Together, they examine and review, in the tradition of the quality standards of Beilstein, the knowledge created by authors from around the world. The resulting manuscript texts are processed and published online for free in the Open Access journals “Beilstein Journal of Organic Chemistry,” since 2005 and “Beilstein Journal of Nanotechnology,” since 2010. The Beilstein Journals give the scientific community worldwide unrestricted access to the latest research results.

The foundation finances all its activities itself – it receives no income from the state or third parties. Funds which are generated by our asset management support our publishing activities, and if there is a surplus, are used to support other projects as set out in this report.

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# INFORMATION AND COMMUNICATION PLATFORMS

OPEN ACCESS JOURNALS AND THE BEILSTEIN TV VIDEO PORTAL: WE ARE COMMITTED TO OPEN ACCESS INFORMATION, TRANSPARENCY, VERIFIABILITY AND A HIGHER DEGREE OF VISUALITY IN SCIENCES - FOLLOWING THE TRADITION OF OUR NAME GIVER FRIEDRICH KONRAD BEILSTEIN.

Katharina Landfester is one of the directors of the Max Planck Institute for Polymer Research in Mainz which is focused on the production, the physical characteristics and the applications of polymers. Professor Landfester has published her research results in the Beilstein Journal of Organic Chemistry and in the Beilstein Journal of Nanotechnology. Moreover, she and her group have participated in three videos for Beilstein TV.

MAX PLANCK INSTITUTE FOR POLYMER RESEARCH, MAINZ



PROFESSOR KATHARINA LANDFESTER

# BEILSTEIN OPEN ACCESS JOURNALS

“The collaboration with the Beilstein-Institut is characterized by a high professionalism which is reflected in the great results; each time a pleasure.”



PROFESSOR KATHARINA LANDFESTER

Max-Planck-Institut für Polymerforschung



MAX PLANCK INSTITUTE FOR POLYMER RESEARCH, MAINZ →

# FREE ACCESS TO SCIENTIFIC PROGRESS

Providing unrestricted access to high-quality scientific information: that is what the Beilstein-Institut stands for with its two core products, the Beilstein Journal of Organic Chemistry launched in 2005 and the Beilstein Journal of Nanotechnology, which has been providing an interdisciplinary platform in the nanosciences since 2010.

One of the most important features of the Beilstein Journals that distinguishes them from most other scientific journals is that there are no publication fees: no costs arise for the authors or the readers. Each article is available worldwide online at the time of its publication without any restrictions to access. Furthermore, the authors of the respective article retain the full copyright to their work – unlike traditional publication practices.

This open access to the publications leads to maximum visibility of the information – and that in turn promotes the communication and the exchange of research ideas and findings. What was at first critically viewed even within the scientific community has now become firmly established. The Beilstein Journal of Organic Chemistry is one of the world's leading open access journals in organic chemistry.

In order to meet the archiving requirements of many funding institutions and at the same time make a contribution to the better visibility for an interdisciplinary audience, the articles of the Beilstein Journals are archived and indexed at PubMed Central, one of the largest digital full-text archives worldwide. In addition, both Beilstein Journals are listed in the “Science Citation Index Expanded” and indexed by Chemical Abstracts Services.

Open access: worldwide access to scientific results and literature with authors retaining their full copyright.

The concept of publishing the articles continually and continuously has also been well-tried and tested – that was by no means common within the industry at the launch of the Beilstein Journal of Organic Chemistry in 2005. At that time, most scientific journals were published as printed issues on a specific date; even electronic versions were produced in a weekly or monthly rhythm. In the case of the Beilstein Journals, however, the articles are published directly after their release by the authors, shortening the time from submission to publication.

Today, more than ever, the fast and unrestricted distribution of information and research results is absolutely essential for scientific progress.

Publishing continuously also simplifies the production of Thematic Series: the series articles are published over a period of months in the normal way within the journal and can be additionally viewed together on a specific Thematic Series page on the website. This practice has in the meantime also been adopted by several publishers. When complete, the Thematic Series is also printed and distributed to interested scientists.

A high level of quality control is important for the Beilstein-Institut; all articles published in the journals undergo a comprehensive peer review during which they are checked for their scientific quality, novelty, originality and scientific significance. In addition, since 2011 all submitted manuscripts go through a check for plagiarism.

The Beilstein editorial team is supported by Associate Editors who carry out the peer review process to assure the scientific quality and are responsible for the final editorial decision. Moreover, Guest Editors supervise Thematic Series on special disciplines.



## PEER REVIEW PROCESS

The peer review process is the qualitative assessment of scientific work by independent experts. For each submitted manuscript, usually two or three referee reports are required. The recommendations of the referees are used by the editors to decide whether the manuscript is accepted, returned for revision, or rejected.



## BEILSTEIN JOURNALS AND BEILSTEIN TV

The more complex the presentation of research results becomes, the sooner their written format hits a natural limit. Beilstein TV, the open access video portal produced by the Beilstein-Institut hosts a visual presentation of scientific research. Usually, the videos are based on submitted articles, however, it can also work the other way around: some film productions inspire the subsequent submission of a manuscript. The interaction between the Beilstein Journals and Beilstein TV enhances the understanding of the subjects and provides users with a multimedia package of information.

Editor-in-Chief of the Beilstein Journal of Organic Chemistry:  
Professor Peter H. Seeberger.

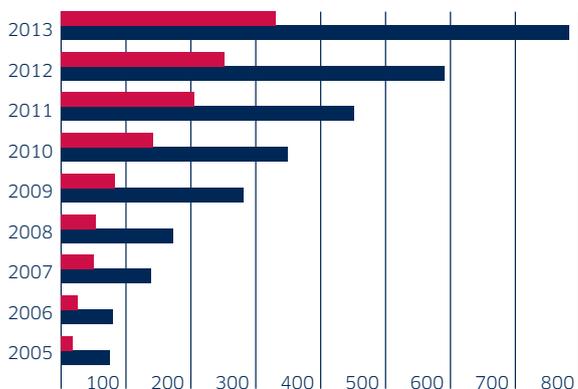


## THE BEILSTEIN JOURNAL OF ORGANIC CHEMISTRY

The Beilstein Journal of Organic Chemistry was launched in 2005 with Professor Jonathan Clayden from the University of Manchester as Editor-in-Chief. He was supported in his work by an Advisory Board, which included many renowned scientists, among them three Nobel laureates. The Advisory Board comprises more than 40 international scientists and is chaired by Professor Henning Hopf of Technische Universität Braunschweig. The Editorial Board – i. e., the journal's specialist group of Associate Editors who are responsible for carrying out the peer review process – now consists of more than 25 members. Professor Peter H. Seeberger from the Max Planck Institute of Colloids and Interfaces in Potsdam took over the position of Editor-in-Chief in 2011.

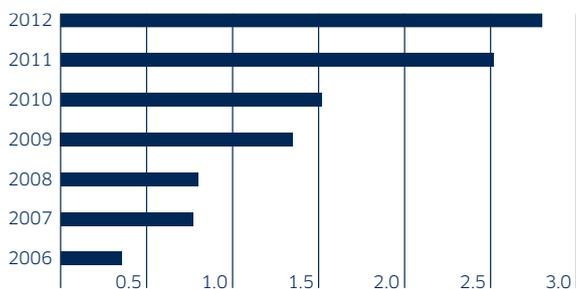
[www.bjoc.org](http://www.bjoc.org)

Submitted and published articles for the Beilstein Journal of Organic Chemistry.



■ Submitted articles  
■ Published articles

Impact Factor of the Beilstein Journal of Organic Chemistry.



The average processing time per article – from submission to publication – is about 90 days.

## ASSOCIATE EDITORS 2009–2013

JEFF AUBÉ **Lawrence, USA**  
 STEFAN BRÄSE **Karlsruhe, Germany**  
 DAVID YU-KAI CHEN **Seoul, South Korea**  
 DARREN J. DIXON **Oxford, UK**  
 VY M. DONG **Irvine, USA**  
 SABINE FLITSCH **Manchester, UK**  
 KRISHNA N. GANESH **Pune, India**  
 DAVID Y. GIN † **New York, USA**  
 PAUL R. HANSON **Lawrence, USA**  
 KENICHIRO ITAMI **Nagoya, Japan**  
 JEFFREY N. JOHNSTON **Nashville, USA**  
 ANDREAS KIRSCHNING **Hanover, Germany**  
 ILAN MAREK **Haifa, Israel**  
 THOMAS J. J. MÜLLER **Düsseldorf, Germany**  
 JOHN A. MURPHY **Glasgow, UK**  
 DAVID O'HAGAN **St Andrews, UK**  
 JOHN A. PORCO JR. **Boston, USA**  
 HELMUT RITTER **Düsseldorf, Germany**  
 MAGNUS RUEPING **Aachen, Germany**  
 PETER R. SCHREINER **Giessen, Germany**  
 NORBERT SEWALD **Bielefeld, Germany**  
 MICHAEL S. SHERBURN **Canberra, Australia**  
 MUKUND P. SIBI **Fargo, USA**  
 PETER SKABARA **Glasgow, UK**  
 DAVID R. SPRING **Cambridge, UK**  
 COREY R. J. STEPHENSON **Ann Arbor, USA**  
 BRIAN M. STOLTZ **Pasadena, USA**  
 DIRK TRAUNER **Munich, Germany**  
 OLAF G. WIEST **Notre Dame, USA**  
 JOHN P. WOLFE **Ann Arbor, USA**  
 TEHSHIK P. YOON **Madison, USA**  
 SHULI YOU **Shanghai, China**  
 STEVEN C. ZIMMERMAN **Urbana, USA**

## IMPACT FACTOR

The Impact Factor measures how often articles from a journal are cited within a certain period of time, relative to the number of articles published. The Impact Factor of the Beilstein Journal of Organic Chemistry in 2012 was 2.801; that of the Beilstein Journal of Nanotechnology was 2.374.

## GUEST EDITORS 2009–2013

KAY M. BRUMMOND **Pittsburgh, USA**  
 GÖTZ BUCHER **Glasgow, UK**  
 DONALD CRAIG **London, UK**  
 HUW M. L. DAVIES **Atlanta, USA**  
 JEAN-PIERRE DESVERGNE **Bordeaux, France**  
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 BENJAMIN LIST **Mülheim an der Ruhr, Germany**  
 DAWEI MA **Shanghai, China**  
 CHRISTOPH A. SCHALLEY **Berlin, Germany**  
 VICTOR SNIIECKUS **Kingston, Canada**  
 F. DEAN TOSTE **Berkeley, USA**

Editor-in-Chief of the Beilstein Journal of Nanotechnology:  
Professor Thomas Schimmel.

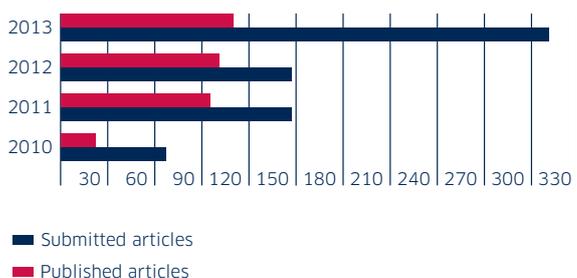


## THE BEILSTEIN JOURNAL OF NANOTECHNOLOGY

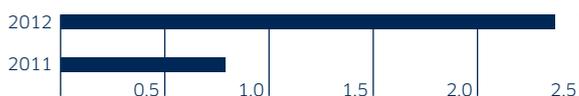
The choice of organic chemistry as the subject area for the first journal finds its roots in the history and experience of the Beilstein-Institut. The considerable positive response from the scientific community to the Beilstein Journal of Organic Chemistry and a survey amongst almost 300 scientists, with whom the Beilstein-Institut discussed a number of promising topics, led to the starting of a second journal: the Beilstein Journal of Nanotechnology. This second Beilstein Journal was launched in 2010 with Professor Thomas Schimmel from the Karlsruhe Institute of Technology (KIT) as Editor-in-Chief and with an Advisory Board – which also included two Nobel Prize winners. Professor Schimmel was initially supported by a ten-member Editorial Board which has now grown in size to more than 20 scientists from Asia, Australia, Europe and the United States.

[www.bjnano.org](http://www.bjnano.org)

Submitted and published articles for the Beilstein Journal of Nanotechnology.



Impact Factor of the Beilstein Journal of Nanotechnology.



The articles of the Beilstein Journals are available free of charge worldwide – up to now, more than three million accesses and downloads have been recorded.

## THEMATIC SERIES

Thematic Series are dedicated to specialized areas of expertise. A Guest Editor invites selected experts to submit an article for a publication in the series. By first performing a detailed analysis of the subject area and the researchers, the Beilstein-Institut supports the Guest Editors in their selection of potential authors. Their number depends on the series topic and is usually between 60 and 80. From about 100 pages upwards, the Thematic Series also appears in a print version and is sent to scientists working in the relevant area. Since 2007, 40 Thematic Series in the Beilstein Journal of Organic Chemistry and 18 in the Beilstein Journal of Nanotechnology have been published.

## GUEST EDITORS 2009–2013

PIERRE EYBEN **Leuven, Belgium**  
 THILO GLATZEL **Basel, Switzerland**  
 HERBERT GLEITER **Karlsruhe, Germany**  
 MICHAEL HUTH **Frankfurt am Main, Germany**  
 ULF WIEDWALD **Ulm, Germany**

## ASSOCIATE EDITORS 2009–2013

WILHELM BARTHLOTT **Bonn, Germany**  
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 SIDNEY R. COHEN **Rehovot, Israel**  
 THOMAS DAVIS **Sydney, Australia**  
 JANE FROMMER **San Jose, USA**  
 ARMIN GÖLZHÄUSER **Bielefeld, Germany**  
 STANISLAV N. GORB **Kiel, Germany**  
 CHENNUPATI JAGADISH **Canberra, Australia**  
 ALEXEI R. KHOKHLOV **Moscow, Russia**  
 KERSTIN KOCH **Kleve, Germany**  
 PAUL LEIDERER **Konstanz, Germany**  
 JAN MA † **Singapur**  
 ALFRED J. MEIXNER **Tübingen, Germany**  
 ERNST MEYER **Basel, Switzerland**  
 NUNZIO MOTTA **Brisbane, Australia**  
 DANIEL J. MÜLLER **Basel, Switzerland**  
 RON NAAMAN **Rehovot, Israel**  
 JÜRGEN RÜHE **Freiburg, Germany**  
 JAN VAN RUITENBEEK **Leiden, The Netherlands**  
 JACOB SAGIV **Rehovot, Israel**  
 JÖRG J. SCHNEIDER **Darmstadt, Germany**  
 UDO D. SCHWARZ **New Haven, USA**  
 ANATOLIE SIDORENKO **Chisinau, Moldova**  
 CLAUDIA STEINEM **Göttingen, Germany**  
 RONG XU **Singapur**  
 PAUL ZIEMANN **Ulm, Germany**

Andreas Kirschning researches and teaches at the Institute of Organic Chemistry of the Leibniz Universität Hannover in Germany. He is an active member of the Editorial Board of the Beilstein Journal of Organic Chemistry and has already published many articles in the journal. He acted as Guest Editor for three Thematic Series and participated in three videos for Beilstein TV.

GOTTFRIED WILHELM LEIBNIZ UNIVERSITÄT HANNOVER



← PROFESSOR ANDREAS KIRSCHNING

# BEILSTEIN TV

“The result of the films produced with my research group was so convincing that we are now using them in lectures and to promote our master’s degree programs, as well as within the REBIRTH excellence cluster.”



PROFESSOR ANDREAS KIRSCHNING

GOTTFRIED WILHELM LEIBNIZ UNIVERSITÄT HANNOVER



# ILLUSTRATING SCIENTIFIC DISCOURSE

The integration of new media in the process of scientific discourse is present at all levels and audiences, for example in publishing, teaching, research seminars, symposia and on websites and online platforms. Yet all possibilities available are seldom fully exploited. With Beilstein TV, the foundation has made optimum use of modern information technology to bring a new project to life to promote scientific discourse. The project fits in well with the focus of the Beilstein-Institut to provide free scientific information to the public without restriction. Beilstein TV is the only professionally produced video portal worldwide to document scientific experiments, lectures and discussions that is fully accessible to everyone.

In talks at conferences, or in lectures and presentations the use of new media has become standard practice. However, in the area of scientific publications, where most research results are communicated, new media has

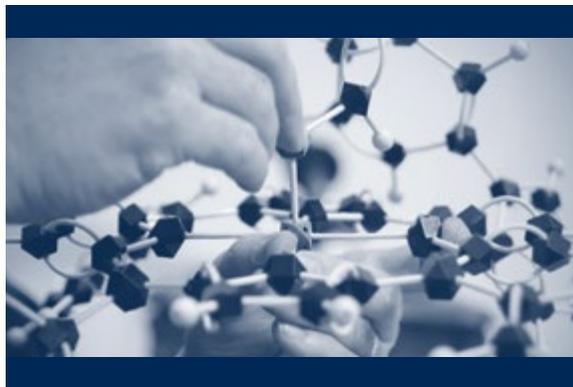
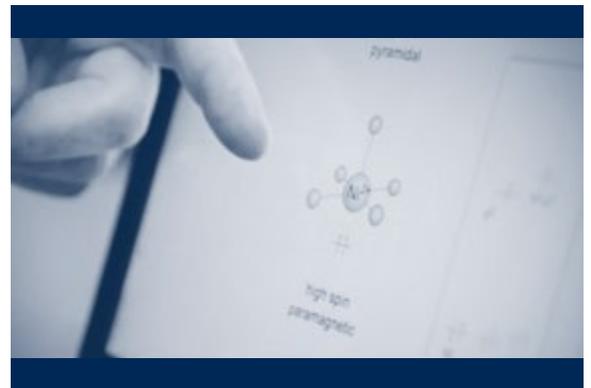
not yet found general acceptance or use. The explanation of increasingly more complex research results using only text and graphics often reaches the limits of what can be represented. It is here that Beilstein TV is able to bridge the gap for a clearer understanding by merging of presentation, animation and documentation into a single sequence – thus ideally supplementing written formats.

A welcome side effect of the visual preparation of subject matter is to draw a personal portrait of the scientist allowing a better understanding of his or her ways of thinking and working. Science does not live from facts alone but also from and through those individuals who devote themselves to it.

Since its start in fall of 2010, the project has evolved continuously. By now, almost 100 videos are freely available on [www.beilstein.tv](http://www.beilstein.tv).

“Working with Beilstein TV was straightforward and was fun. I was initially skeptical, now I often get asked about the film which we also show on our website.”

Professor Rainer Herges,  
Christian-Albrechts-Universität zu Kiel



Screenshots from “The world’s smallest switchable magnet and its application in medical diagnostics.”



Screenshots from "Smart carbohydrate chemistry as a means to understand glyocalyx biology."

“The initiative brings a lot of ‘zeitgeist’ into our profession which is otherwise lacking audience appeal; we have to extend our horizons and express ourselves in such a way that people outside our narrow community become interested.

That feels good!”

Professor Thisbe K. Lindhorst,  
Christian-Albrechts-Universität zu Kiel

The videos of Beilstein TV show experiments in the research laboratory, lectures and interviews with scientists.

## THE PRODUCTION OF A BEILSTEIN VIDEO

Even though the video is often initiated by the Beilstein-Institut, the personal contribution of the scientists always plays an important role in its production. The Beilstein-Institut provides the infrastructure, supports them with advice and takes over all technical aspects and costs for camera and sound including directing and editing work – the “screenplay,” however, is written by the scientists.

The chemist Professor Rainer Herges, from the Institute for Organic Chemistry at Kiel University, has already made two contributions to the Beilstein TV gallery. The subject of his latest film made in May 2013 was the development of a novel contrast agent that can be used in magnetic resonance imaging (MRI).

The video was recorded in the operating facilities of the University Hospital in Kiel and in laboratories of the University. Idea and dramatic composition of the video originated completely from Rainer Herges. His graduate student Marcel Dommaschek played an important role

in explaining the chemical processes. On the actual day before filming started only a brief discussion with the protagonists was necessary in order to go through the procedure again. After just one day for the production team, enough material was available, and a few weeks later the cut and finished film could be released after the final approval of Rainer Herges.

Knowledge communication via video illustrates abstract research results.

The Beilstein TV videos are an important part of the mission of the Beilstein-Institut to create a broader understanding of science and are published under a creative commons license. This means that they can be freely accessed, for example, for teaching purposes. Rainer Herges’s “turntable molecules” are an excellent example of how videos can be used to communicate exciting new scientific developments.

[www.beilstein.tv](http://www.beilstein.tv)

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# SCIENTIFIC EVENTS

DUE TO THE RAPID GROWTH OF KNOWLEDGE, THE NEED FOR COMMUNICATION AND NETWORKING AMONG SCIENTIFIC RESEARCHERS IS INCREASING. WITH OUR EVENTS AND MEETINGS WE PAVE THE WAY FOR INTERDISCIPLINARY DISCUSSIONS AND NEW INITIATIVES IN DEVELOPING PUBLICATION STANDARDS.

Within the interdisciplinary research collaboration project “Cluster of Excellence Engineering of Advanced Materials” at the Friedrich-Alexander-Universität Erlangen-Nürnberg, Timothy Clark leads a research group at the Computer Chemistry Center. He is a regular speaker of the Beilstein Bozen Symposium and has published in the Beilstein Journal of Organic Chemistry.

FRIEDRICH-ALEXANDER-UNIVERSITÄT  
ERLANGEN-NÜRNBERG



← PROFESSOR TIMOTHY CLARK



# THE BEILSTEIN BOZEN SYMPOSIUM

“The Beilstein symposia are a uniquely stimulating scientific experience; a real intellectual feast. I have attended all symposia since the first in 1988 and have taken countless new ideas home from each of them.”



PROFESSOR TIMOTHY CLARK

FRIEDRICH-ALEXANDER-UNIVERSITÄT ERLANGEN-NÜRNBERG →

# CONFERENCES WITH A UNIQUE CHARACTER

The Beilstein Bozen Symposium, the first conference series of the Beilstein-Institut, has a long tradition. Since 1988, the event has each time been dedicated to different subject areas and has become part of the permanent repertoire of Beilstein activities. The symposium takes its name from the Northern Italian city of Bolzano (German: Bozen), which up to 2010 was also its venue.

Every Beilstein Bozen Symposium is always an interesting experiment with an open result: the Beilstein-Institut gives the initial impulse via the title, the selection of speakers and the compilation of sessions defining the scope of subjects to be discussed. The program is designed specifically to allow sufficient time for discussions and to give participants the possibility to look beyond their own scientific horizons. In some ways the talks can be seen as providing a framework for lively discussions which have often led to subsequent cooperation projects. The resulting interdisciplinary exchange is the underlying goal of the meeting and gives the Beilstein Bozen Symposium its unique character.

The focus of the symposia in previous years was mainly on interdisciplinary aspects of chemistry and biology. In 2010, this was expanded to include topics in physics. The number of participants is limited to a maximum of 50 scientists which in particular promotes a lively and intense exchange of thoughts and ideas. The coordination and organization of the Beilstein Bozen Symposium is in the hands of Dr. Martin G. Hicks and Dr. Carsten Kettner, who are also the editors of the proceedings of the meeting, which are published after each symposium in book form and online on the web pages of the Beilstein-Institut.

[www.beilstein-symposia.org](http://www.beilstein-symposia.org)

From biochemistry, organic and inorganic chemistry to physics and materials science: functional nanoscience requires interdisciplinary exchange.

## THE BEILSTEIN BOZEN SYMPOSIUM 2010

The research areas grouped together under the title “Functional Nanoscience” deal with the molecular dynamics of structures on a nanometer scale. From May 17 to May 21, participants in the fields of biochemistry, organic and inorganic chemistry, physics and material sciences met to present and discuss their latest research results during the last meeting that was held in Bolzano. The symposium began with a discussion of what is meant by “Functional Nanoscience” – which in the context of the lecture program was of course very broad, ranging from self-assembly of supramolecular aggregates to nanomolecular surfaces and to sugar-based multivalent probes.

In addition to the intensive discussions, time was also available for informal exchanges beyond the scientific program. For example, during the excursion the group first visited the ice holes near Appiano – a protected biotope –, then hiked a trail leading to Boymont Castle. Strengthened and inspired, the participants returned to their discussions which subsequently took on a new and creative twist.

## SPEAKERS AT THE BEILSTEIN BOZEN SYMPOSIUM 2010

TIMOTHY CLARK Erlangen, Germany  
 ATHEL CORNISH-BOWDEN Marseille, France  
 PETER DIMROTH Zurich, Switzerland  
 KEITH FIRMAN Portsmouth, UK  
 CHRISTOPH GERBER Basel, Switzerland  
 MICHAEL HUTH Frankfurt am Main, Germany  
 JORGEN KJEMS Aarhus, Denmark  
 KERSTIN KOCH Kleve, Germany  
 PETER KRÁL Chicago, USA  
 JOHANNES J. L. MULDERE Eindhoven, The Netherlands  
 JONATHAN D. POSNER Tempe, USA  
 THOMAS SCHIMMEL Karlsruhe, Germany  
 PETRA SCHWILLE Dresden, Germany  
 PETER H. SEEBERGER Potsdam, Germany  
 NADRIAN C. SEEMAN New York, USA  
 WILLIAM M. SHIH Boston, USA  
 SYLVIA SPELLER Nijmegen, The Netherlands  
 FRASER STODDART Evanston, USA  
 PAUL S. WEISS Los Angeles, USA  
 DAVID A. WINKLER Clayton, Australia

The last Beilstein Bozen Symposium that was held in Bolzano took place in May 2010.



Stimulating and open-ended discussions: the Beilstein Bozen Symposium is a star-studded event which is focused on generating new ideas during the interdisciplinary dialog. In this experiment, we act as a catalyst.



## THE BEILSTEIN BOZEN SYMPOSIUM 2012 – PREMIERE IN PRIEN

For the next meeting in 2012, the symposium changed its location to Prien on Lake Chiemsee in Germany. Extending the previous theme, the talks focused this time on the targeted control of molecular processes at the nano- and micrometer scale. Twenty scientists introduced their current research results under the heading “Molecular Engineering and Control” covering processes at and on surfaces, molecular self-organization and self-assembly and the distribution of active substances and biological transport phenomena.

During the three-day symposium, four lectures were held on each of the morning and afternoon sessions; amongst others, Jean-Marie Lehn, Nobel Prize winner from Strasbourg, provided some new and inspiring ideas in his opening lecture on the second symposium day. Following the symposium tradition, informal exchanges took place during an excursion to Herrenchiemsee Island. With lively and open-minded discussions, the meeting came to an end with the first ideas for the next meeting in 2014 starting to crystallize.



## SPEAKERS AT THE BEILSTEIN BOZEN SYMPOSIUM 2012

R. DEAN ASTUMIAN **Orono, USA**  
 DARRYL J. BORNHOP **Nashville, USA**  
 NEDILJKO BUDISA **Berlin, Germany**  
 TIMOTHY CLARK **Erlangen, Germany**  
 LEE CRONIN **Glasgow, UK**  
 ERIC DREXLER **Oxford, UK**  
 ARMIN GÖLZHÄUSER **Bielefeld, Germany**  
 MICHAEL HUTH **Frankfurt am Main, Germany**  
 THOMAS A. JUNG **Villigen, Switzerland**  
 ANDREAS KIRSCHNING **Hanover, Germany**  
 TIBOR KUDERNAC **Enschede, The Netherlands**  
 PETER LEADLAY **Cambridge, UK**  
 JEAN-MARIE LEHN **Strasbourg, France**  
 ROBERT J. MACFARLANE **Evanston, USA**  
 EIICHI NAKAMURA **Tokyo, Japan**  
 GUILLAUME SALBREUX **Dresden, Germany**  
 THOMAS SCHIMMEL **Karlsruhe, Germany**  
 FRANK SCHULZ **Dortmund, Germany**  
 PAUL S. WEISS **Los Angeles, USA**  
 DAVID A. WINKLER **Clayton, Australia**

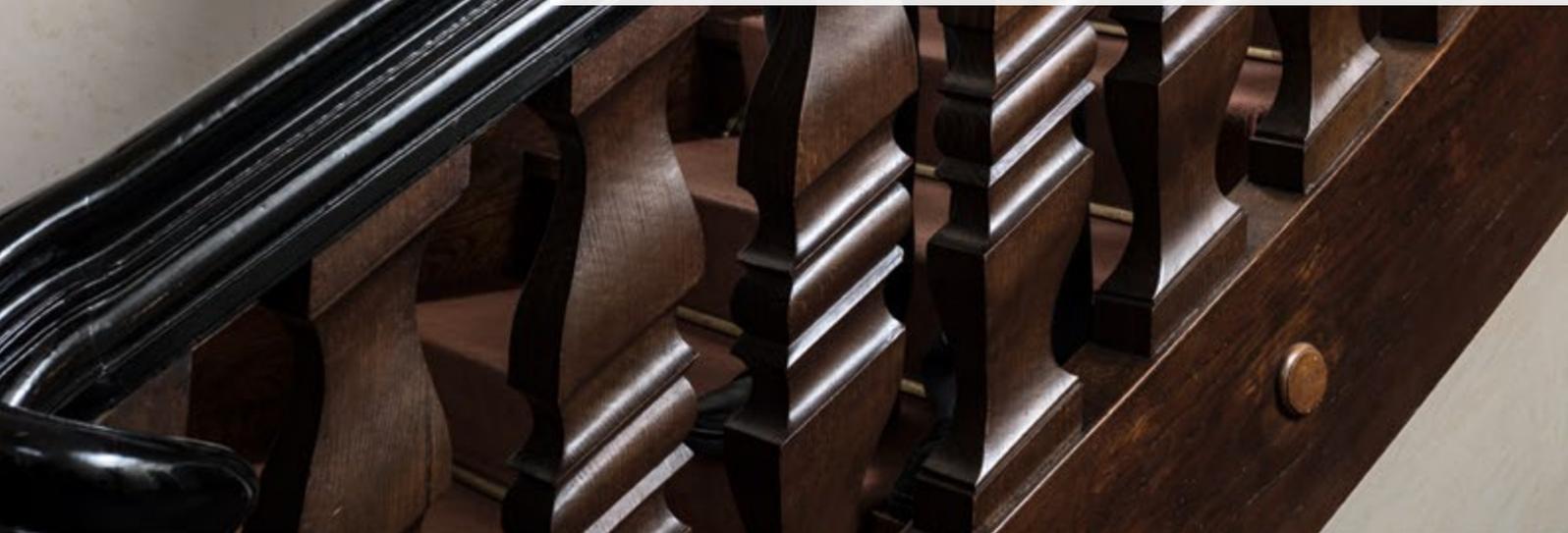


As Directeur de Recherche Émérite at the Centre National de la Recherche Scientifique (CNRS) in Marseille, Athel Cornish-Bowden can look back on a long and successful international career. He is a founding member of the STRENDA Commission and has been a regular speaker at both the Beilstein Bozen Symposium and the Beilstein ESCEC Symposium.

**RÜDESHEIM AM RHEIN**  
**LOCATION OF THE BEILSTEIN ESCEC SYMPOSIA**



← **DR. ATHEL CORNISH-BOWDEN**



# STRENDA AND BEILSTEIN ESCEC SYMPOSIUM

“I have had a close association with the Beilstein-Institut for a little more than ten years. All the activities have been a very positive experience for me, especially because of the numerous new contacts.”



DR. ATHEL CORNISH-BOWDEN

RÜDESHEIM AM RHEIN  
LOCATION OF THE BEILSTEIN ESCEC SYMPOSIA →



# STANDARDIZED PUBLISHING OF RESEARCH RESULTS

An exchange of information is only possible if transmitter and receiver agree on two basic conditions: a transmission protocol and a syntax that puts the individual terms as components into a relative context. Friedrich Konrad Beilstein's Handbook of Organic Chemistry, which was first published in the late nineteenth century, already addressed the task of finding a systematic comprehensive description of organic chemistry. The first symposium on data quality and standards, which the Beilstein-Institut hosted in 2003 facing increasing problems in the communication of information in enzyme chemistry, thus took place as part of a good tradition. The starting point for discussion was the fact that data on enzyme activity in the literature is neither comparable nor easily reproducible – the aim of the project was to change this.

Since 2004, the working group dealing with “Standards for Reporting Enzymology Data,” or STRENDA, has been financially and organizationally supported by the Beilstein-Institut.

[www.beilstein-symposia.org](http://www.beilstein-symposia.org)

Worldwide, there are a number of initiatives dealing with standards for research results in proteomics and genomics. Our focus is on the improvement of data quality in enzymology.

## ESCEC: ENZYME CHARACTERIZATIONS IN FOCUS

Since 2003, the Beilstein-Institut has extended an invitation to the “Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations,” or ESCEC, every two years in Rüdeshheim am Rhein in Germany. The conferences are organized by Dr. Carsten Kettner and Dr. Martin G. Hicks from the Beilstein-Institut. As usual for meetings and conferences hosted by the foundation, ESCEC also follows the motto “small is beautiful:” with a number of participants that is limited to a maximum of 50 people. International experts in enzymology meet to discuss current research findings in the field of enzyme mechanisms, structure–function relationships and systems biology. The afternoon excursions to the Middle Rhine Valley or surrounding attractions provide an ideal addition to supplement the scientific presentations at the three-day meeting in Rüdeshheim.

An important issue on the agenda of the fourth Beilstein ESCEC Symposium in 2009 was the integration with other initiatives for standardization. More than 40 participants had gathered in Rüdeshheim to discuss existing guidelines as well as possible improvements. The fifth Beilstein ESCEC Symposium held two years

later was titled “Protein structure meets enzyme kinetics.” A total of 22 lectures covered the wide range of topics from experimental annotation, through additional information obtained in experiments, to the storage and analysis of data in databases. Again, the international attendance to the conference was very good with 40 scientists from Austria, France, Germany, Iran, Ireland, Israel, the United Kingdom and the United States.

Interest in the most recent meeting in 2013 was similar and was dedicated to the 100th anniversary of the publication of the Michaelis–Menten equation: this equation provided the first correct description of enzyme kinetics and is still in use today. Almost 40 participants followed the presentations, which covered a wide area from acknowledgements of the work of Leonor Michaelis and Maud Menten to the interactions of proteins and networks up to the modeling of metabolic pathways.



In September 2013, members of the STRENDA Commission and other scientists met during the sixth Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations in Rudesheim am Rhein in Germany. From left to right: Dr. Carsten Kettner, Dr. Athel Cornish-Bowden, Professor Johann M. Rohwer, Professor Barbara M. Bakker, Professor Frank M. Raushel, Professor Richard N. Armstrong, Professor Thomas S. Leyh, Professor Jan-Hendrik S. Hofmeyer and Professor Dietmar Schomburg.





In many scientific disciplines it is often impossible to compare data and reproduce research results. Projects such as ESCEC and STRENDA aim to develop and establish standard forms of data presentation – in this case for enzyme research.



Despite the rainy weather, the participants of the sixth Beilstein Symposium on Experimental Standard Conditions of Enzyme Characterizations enjoyed a walk to the Niederwald monument above the town of Rüdesheim.

## STRENDA: PUBLICATION STANDARDS IN ENZYME RESEARCH

Since 2004, the STRENDA working group has been financially and organizationally supported by the Beilstein-Institut, and currently consists of ten members worldwide. Its aim is to develop standards for the publication of enzyme data. For this purpose, the group formulates recommendations as part of “Good Laboratory Practice” guidelines to ensure the comparability of results. In the meantime, more than 30 biochemistry journals recommend these guidelines in their “Instructions for Authors.” They include major journals such as the “Journal of Biological Chemistry,” “Biochemistry,” “Nature Chemical Biology” and “Proceedings of the National Academy of Sciences, U.S.A.”

The working group also started to develop a database for functional enzyme data. The prototype of this database was presented for the first time in September 2012 in Seville and in April 2013 at the BioCuration Conference in Cambridge. The idea behind the project is to offer authors a web-based tool for the formal quality review of functional enzyme data. This tool is based on the STRENDA guidelines and automatically checks the relevant manuscript data on input by the author. A STRENDA identification number is then issued to mark the data compliance if this check is passed. This number can be quoted in later publications.

After the publication of the manuscript data, the information registered in the database is published and indexed. In this way, the STRENDA database will become an important source of functional enzyme data providing the full experimental conditions under which the data was obtained. The beta version of the STRENDA database is currently undergoing testing; the release is planned for 2014.

The STRENDA Commission currently consists of ten members worldwide. The aim of the commission is the development of standards for the publication of enzyme data: by now, more than 30 biochemistry journals recommend the STRENDA guidelines in their “Instructions for Authors.”

### MEMBERS OF THE STRENDA COMMISSION

RICHARD N. ARMSTRONG **Nashville, USA**  
AMOS BAIROCH **Geneva, Switzerland**  
BARBARA M. BAKKER **Groningen, The Netherlands**  
ATHEL CORNISH-BOWDEN, **Marseille, France**  
PETER HALLING **Glasgow, UK**  
CARSTEN KETTNER **Frankfurt am Main, Germany (coordination)**  
THOMAS S. LEYH **Bronx, USA**  
FRANK M. RAUSHEL **College Station, USA**  
JOHANN M. ROHWER **Stellenbosch, South Africa**  
DIETMAR SCHOMBURG **Braunschweig, Germany**

## SPEAKERS AT THE BEILSTEIN SYMPOSIA ON EXPERIMENTAL STANDARD CONDITIONS OF ENZYME CHARACTERIZATIONS 2009–2013

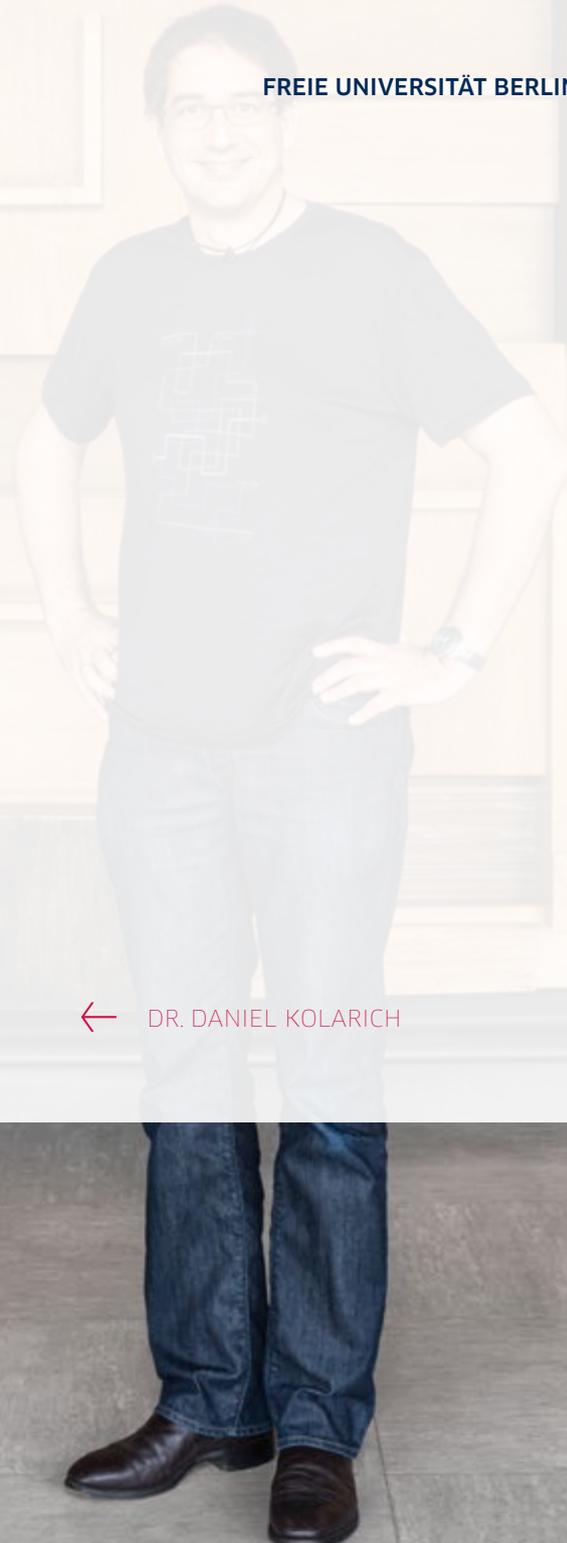
KAREN N. ALLEN <b>Boston, USA</b>	THOMAS S. LEYH <b>Bronx, USA</b>
DOUGLAS AULD <b>Rockville, USA</b>	KLAUS MAUCH <b>Stuttgart, Germany</b>
RICHARD N. ARMSTRONG <b>Nashville, USA</b>	PEDRO MENDES <b>Manchester, UK</b>
PATRICIA BABBIT <b>San Francisco, USA</b>	THOMAS MILLAT <b>Rostock, Germany</b>
BARBARA M. BAKKER <b>Groningen, The Netherlands</b>	ELAINE O'REILLY <b>Manchester, UK</b>
ANTONIO BAICI <b>Zurich, Switzerland</b>	MONICA PALCIC <b>Copenhagen, Denmark</b>
RICHARD CAMMACK <b>London, UK</b>	KATJA RATEITSCHAK <b>Rostock, Germany</b>
MARÍA LUZ CÁRDENAS <b>Marseille, France</b>	FRANK M. RAUSHEL <b>College Station, USA</b>
ATHEL CORNISH-BOWDEN <b>Marseille, France</b>	GREGORY D. REINHART <b>College Station, USA</b>
GILLES CURIEN <b>Grenoble, France</b>	NIGEL J. ROBINSON <b>Durham, UK</b>
ELISABETH DAVIOUD-CHAVET <b>Strasbourg, France</b>	JOHANN M. ROHWER <b>Stellenbosch, South Africa</b>
HOLGER DOBBEK <b>Berlin, Germany</b>	GARY RUDNICK <b>New Haven, USA</b>
OLIVER EBENHOEH <b>Aberdeen, UK</b>	HARTMUT SCHLÜTER <b>Hamburg, Germany</b>
LUCIA GARDOSSI <b>Trieste, Italy</b>	DIETMAR SCHOMBURG <b>Braunschweig, Germany</b>
ROBERT GOLDBERG <b>Gaithersburg, USA</b>	LIE-FEN SHYUR <b>Taipei, Taiwan</b>
ROGER S. GOODY <b>Dortmund, Germany</b>	GERTIEN J. SMITS <b>Amsterdam, The Netherlands</b>
F. PETER GUENGERICH <b>Nashville, USA</b>	VLADIMIR SOBOLEV <b>Rehovot, Israel</b>
MUNISHWAR N. GUPTA <b>New Delhi, India</b>	CHRISTOPH STEINBECK <b>Hinxton, UK</b>
PETER HALLING <b>Glasgow, UK</b>	REINHARD STERNER <b>Regensburg, Germany</b>
LIZBETH HEDSTROM <b>Waltham, USA</b>	CHRISTOPHER F. TAYLOR <b>Hinxton, UK</b>
ADRIANO HENNEY <b>Heidelberg, Germany</b>	KEITH TIPTON <b>Dublin, Ireland</b>
JAN-HENDRIK S. HOFMEYR <b>Stellenbosch, South Africa</b>	PETER UETZ <b>Richmond, USA</b>
MATTHEW P. JACOBSON <b>San Francisco, USA</b>	KAREN VAN EUMEN <b>Gothenburg, Sweden</b>
MINORU KANEHISA <b>Kyoto, Japan</b>	HANS V. WESTERHOFF <b>Amsterdam, The Netherlands</b>
URSULA KLINGMÜLLER <b>Heidelberg, Germany</b>	CHRISTIAN P. WHITMAN <b>Austin, USA</b>
EDDA KLIPP <b>Berlin, Germany</b>	JAN-OLOF WINBERG <b>Tromsø, Norway</b>
MANFRED KONRAD <b>Göttingen, Germany</b>	ULRIKE WITTIG <b>Heidelberg, Germany</b>
SCOTT T. LEFURGY <b>Bronx, USA</b>	YU (BRANDON) XIA <b>Boston, USA</b>

Daniel Kolarich is group leader at the Max Planck Institute of Colloids and Interfaces in Potsdam. Due to redevelopment work, he currently performs his research of glycoproteins in the rooms and labs of the Freie Universität Berlin. As a member of the MIRAGE working group and as a speaker at the Beilstein Glyco-Bioinformatics Symposium he focuses on the standardization of research results in his field.

FREIE UNIVERSITÄT BERLIN



← DR. DANIEL KOLARICH



# MIRAGE AND BEILSTEIN GLYCO-BIO- INFORMATICS SYMPOSIUM

“Science is at the heart of the Beilstein activities. This is the main reason why I enjoy working with the Beilstein-Institut. Moreover, it positively affects the results of the projects.”



DR. DANIEL KOLARICH

FREIE UNIVERSITÄT BERLIN →

# IMPROVING SUGAR DATA QUALITY

When one hears the term “mirage,” it is usual to think of an illusion. However, at Beilstein MIRAGE is used in a very concrete way: the acronym stands for “Minimum Information Required for A Glycomics Experiment.” Similar to the STRENDA project, MIRAGE also involves formulating standards for the publication of experimental data – but this time in the field of glycomics, the science concerned with the structures of sugar molecules and their binding to other molecules such as proteins and lipids, and on cell surfaces.

Glycomics has been an emerging discipline for about a decade: its subject matter is the structure–function relationships of complex bio-synthesized carbohydrates and their role in biological systems. Whereas in the areas

of nucleic acids and proteins their sequencing (i. e., investigating the sequence of molecular components) has been automated for many years, it has only been possible to use this technique recently on carbohydrates. A number of research groups around the world have made significant scientific and technical progress within a short time. This has led to a rapidly growing number of data sets on the structure and the interactions of carbohydrates with proteins and nucleic acids. In order to make this data qualitatively and quantitatively comparable and above all reproducible for science, standardization is essential for its publication.

The standardization of experimental conditions is often an enormous challenge due to the complexity of the processes.

## SPEAKERS AT THE BEILSTEIN GLYCO-BIOINFORMATICS SYMPOSIA 2009–2013

KIYOKO F. AOKI-KINOSHITA **Tokyo, Japan**  
 CATHERINE E. COSTELLO **Boston, USA**  
 ANNE DELL **London, UK**  
 TEN FEIZI **London, UK**  
 ROBERT A. FIELD **Norwich, UK**  
 SABINE FLITSCH **Manchester, UK**  
 MARTIN FRANK **Heidelberg, Germany**  
 HANS-JOACHIM GABIUS **Munich, Germany**  
 STEFFEN GOLETZ **Berlin, Germany**  
 PAMELA GREENWELL **London, UK**  
 GERALD W. HART **Baltimore, USA**  
 STUART HASLAM **London, UK**  
 HANS HEINDL **London, UK**  
 BERNHARD HENRISSANT **Marseille, France**  
 PETER HUFNAGEL **Bremen, Germany**  
 NICLAS G. KARLSSON **Gothenburg, Sweden**  
 OLIVER KOHLBACHER **Tübingen, Germany**  
 DANIEL KOLARICH **Berlin, Germany**  
 HARALD KOSCH **Passau, Germany**  
 STEFAN KRAMER **Munich, Germany**  
 JUNG-HSING LIN **Taipei, Taiwan**  
 THISBE K. LINDHORST **Kiel, Germany**  
 FRÉDÉRIQUE LISACEK **Geneva, Switzerland**  
 THOMAS LÜTTEKE **Giessen, Germany**  
 HIROSHI MAMITSUKA **Kyoto, Japan**

HISASHI NARIMATSU **Tsukuba, Japan**  
 MILOS V. NOVOTNY **Bloomington, USA**  
 STEFAN OSCARSON **Dublin, Ireland**  
 NICOLLE PACKER **Sydney, Australia**  
 JAMES C. PAULSON **La Jolla, USA**  
 HANNU PELTONIEMI **Helsinki, Finland**  
 THOMAS PETERS **Lübeck, Germany**  
 RAHUL RAMAN **Cambridge, USA**  
 RENÉ RANZINGER **Athens, USA**  
 ERDMANN RAPP **Magdeburg, Germany**  
 VERNON N. REINHOLD **Durham, USA**  
 PAULINE M. RUDD **Dublin, Ireland**  
 GISBERT SCHNEIDER **Zurich, Switzerland**  
 PETER H. SEEBERGER **Potsdam, Germany**  
 JÜRGEN SEIBEL **Würzburg, Germany**  
 CHRISTOPH STEINBECK **Hinxton, UK**  
 ROLAND STENUTZ **Stockholm, Sweden**  
 MARK STOLL **London, UK**  
 ICHIGAKU TAKIGAWA **Sapporo, Japan**  
 MICHAEL TIEMEYER **Athens, USA**  
 W. BRUCE TURNBULL **Leeds, UK**  
 CARLO UNVERZAGT **Bayreuth, Germany**  
 ROBERT J. WOODS **Athens, USA**  
 XIAOYONG YANG **New Haven, USA**  
 WILLIAM S. YORK **Athens, USA**

The aim is to make possible the comparison and reproduction of the data on the structure and the interactions of carbohydrates with proteins and nucleic acids.



Kick-off meeting of the MIRAGE working group in Seattle, USA, in 2011.





Since 2009, the Beilstein-Institut has invited experts in the field to discuss the decoding of carbohydrates. About 20 talks, poster presentations and software demonstrations are at the core of the Beilstein Glyco-Bioinformatics Symposium which takes place every two years.

## SUCCESSFUL NETWORKING

Scientific progress depends on the reliable exchange of information and the interdisciplinary cooperation among scientists working in laboratories and on computational-based approaches. In 2009, inspired by the Beilstein STRENDA project, a group of scientists had the idea to develop guidelines on publication standards also for the newly derived sugar data. The first get-together of scientists who work in the field of glycochemistry and glycobiology with experts in bio-informatics and computer science took place in October of the same year at the first Beilstein Glyco-Bioinformatics Symposium. The response of the more than 60 participants in Potsdam, Germany, quickly made it clear that this idea was worth pursuing. Two years later the next symposium on sugar decoding entitled “Cracking the Sugar Code by Navigating the Glycospace” followed. In June 2013 the third symposium was organized, this time with the motto “Discovering the Subtleties of Sugars.” More than 50 participants accepted the invitation to attend the symposium to discuss, amongst other things, the decoding of carbohydrate signals and software tools for data analysis.

This new series of symposia – with Dr. Martin G. Hicks, Dr. Carsten Kettner and Professor Peter H. Seeberger as members of the scientific committee – is held every two years. Each meeting comprises a three-day scientific program with around 20 presentations, up to ten poster presentations, and software demonstrations.

[www.beilstein-symposia.org](http://www.beilstein-symposia.org)

## THE MIRAGE WORKING GROUP MEMBERS

SANJAY AGRAVAT **Atlanta, USA**  
MATTHEW CAMPBELL **Sydney, Australia**  
STUART HASLAM **London, UK**  
MASAKI KATO **Saitama, Japan**  
CARSTEN KETTNER **Frankfurt am Main, Germany (coordination)**  
DANIEL KOLARICH **Berlin, Germany**  
YAN LIU **London, UK**  
RYAN MCBRIDE **La Jolla, USA**  
RENÉ RANZINGER **Athens, USA**  
ERDMANN RAPP **Magdeburg, Germany**  
WESTON STRUWE **Oxford, UK**  
WILLIAM S. YORK **Athens, USA**  
JOSEPH ZAIA **Boston, USA**

## THE MIRAGE ADVISORY BOARD MEMBERS

KIYOKO AOIKI-KINOSHITA **Tokyo, Japan**  
CATHERINE E. COSTELLO **Boston, USA**  
ANNE DELL **London, UK**  
TEN FEIZI **London, UK**  
NICOLAS G. KARLSSON **Gothenburg, Sweden**  
KAY-HOOI KHOO **Taipei, Taiwan**  
MILOS V. NOVOTNY **Bloomington, USA**  
NICOLLE H. PACKER **Sydney, Australia**  
JAMES C. PAULSON **La Jolla, USA**  
PAULINE M. RUDD **Dublin, Ireland**  
DAVID SMITH **Atlanta, USA**  
MICHAEL TIEMEYER **Athens, USA**  
LANCE WELLS **Athens, USA**

## CONTINUING DEVELOPMENT

Seeing the need for standardized data collection and publication of data, 12 international experts in the field of glycoanalysis and bioinformatics founded a working group as part of the second Beilstein Glyco-Bioinformatics Symposium 2011: the MIRAGE project was born. Only a few months later, the “MIRAGE Kick-off Meeting” in Seattle, USA, took place over two days, where the members of the working group drafted the short- and long-term goals of the project.

Since then, the group – under the umbrella of the financial support by the Beilstein-Institut – has been intensively working on formulating and improving standards for publishing experimental data. Their work has been supported by the project coordinators Dr. Carsten Kettner, Dr. René Ranzinger and Professor William S. York – who are also responsible for the on-line publications – and by the members of the MIRAGE Advisory Board. In addition to initiating further networking in the academic environment, the Advisory Board assesses the working results and assists in establishing the use and the dissemination of the MIRAGE standards.

Since the inaugural MIRAGE working group meeting in 2011, three further meetings have been held. During the second meeting in August 2012 a draft version of the MIRAGE guidelines for mass spectrometry data was given to the Advisory Board to be reviewed. In addition, the meeting was used to discuss the guidelines for the publication of glycomics data with those scientifically responsible for journals such as “Molecular & Cellular Proteomics” (MCP), “Glycobiology” and “Journal of Biological Chemistry” (JBC). Half a year later, the mass spectrometry guidelines underwent a revision at the follow-up meeting and were then published in April 2013 in MCP.

The fourth meeting of the working group took place ahead of the third Beilstein Glyco-Bioinformatics Symposium 2013 in Potsdam. The participants were able to finalize the guidelines for liquid chromatography data collection as well as to present a first draft of a software tool that is designed to facilitate the handling of the MIRAGE guidelines.

**More than 50 participants from 12 countries  
met for the third Beilstein Glyco-Bioinformatics Symposium  
at Griebnitzsee in Potsdam, Germany.**



**FUNDING REPORT 2009-2013**

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03

# COURSES AND EDUCATIONAL PROJECTS FOR SCHOOL PUPILS

ATTRACTING TALENTED YOUNG SCIENTISTS AND SUPPORTING THEIR EDUCATIONAL TRAINING: WE ARE COMMITTED TO AN INTERDISCIPLINARY AND SUSTAINABLE CONCEPT OF EDUCATION SUPPORTING EXPERT KNOWLEDGE, GENERAL EDUCATION AND ENTHUSIASM FOR SCIENTIFIC RESEARCH.

Since 2004, the Hessian Student Academy complements and expands the teaching courses of public schools. The academy is held during the fall break at Burg Fürsteneck in the heart of the hilly landscape of the Rhön.

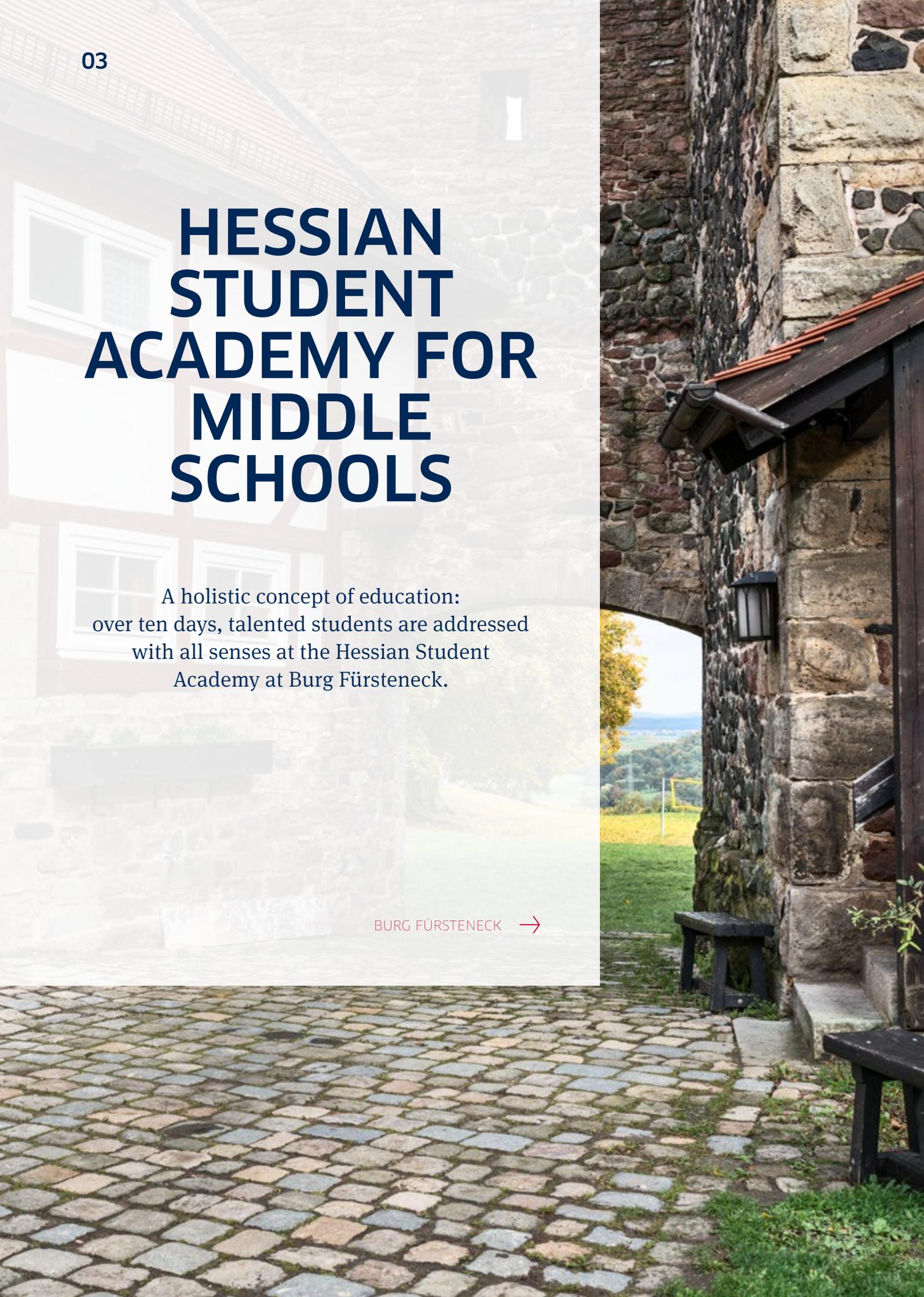
**BURG FÜRSTENECK**



# HESSIAN STUDENT ACADEMY FOR MIDDLE SCHOOLS

A holistic concept of education:  
over ten days, talented students are addressed  
with all senses at the Hessian Student  
Academy at Burg Fürsteneck.

BURG FÜRSTENECK →



# DISCOVER KNOWLEDGE

Practice makes perfect: for this reason, the Beilstein-Institut has been supporting the education of young scientists since 2011. It funds the Hessian Student Academy for Middle Schools, where younger students of German school grades seven to nine can follow their specific (learning) interests in the fall break at Burg Fürsteneck – located between Fulda and Bad Hersfeld. The courses are led by university teaching staff and advanced students.

## Independently exploring chemistry from different perspectives

The first Academy for Middle Schools took place in October 2011. Sixty participants came together for ten days to participate in an extracurricular educational program. This included various activities such as sports and leisure in addition to the majors and electives in different subject areas.

The main courses covered the fields of chemistry, biology, mathematics, business ethics and cultural studies. “The wonderful world of metals” was the focus of the chemistry course. Twelve participants were able to learn different experimental methods and extend their existing knowledge from school. In the field of biology, students concentrated on the microcosm and its small hidden worlds, taking a closer look at the pond as an eco-system with the water flea as an example. The topic of the mathematics course was “Geometry in the plane, in space and hyperspace;” this included in particular training the brain to think geometrically. The business ethics course was titled “Courage, power, morale:” given the current economic and political developments as a background, participants discussed the question of whether and how economics and ethics fit together. Theatrical improvisation or the “Art of the Moment” was on the agenda in the field of cultural studies: in addition to theory amongst other things, the two teachers mediated a deeper understanding of body language.

The Hessian Student Academy encourages creative encounters with sciences and arts: making learning fun.

## LEARNING IS FUN

In addition to a main course, each pupil could take two elective courses from the fields of photography, theatre, the visual arts, dance and music. More activities such as interactive games, juggling and unicycle riding, geocaching and yoga ensured that the attendees had a great time at Burg Fürsteneck. On the last day, when 130 guests were given an insight into the students' work, it became clear how successful the premiere of the first academy for middle schools had been – and how useful it was as a precursor to the Upper-School Academy which has been offered since 2004.

In 2012, the Academy for Middle Schools went into its second round. Once again, 60 gifted intermediate school students from schools in Hessen were given the opportunity to pursue topics in the natural sciences, media studies and art and culture. This time five main courses from the fields of chemistry, mathematics, biology, cultural studies and aesthetic practice and media culture were offered. "The world is colorful" was the title of the chemistry course, in which 12 participants discovered, for example, what properties dyes have, where they come from and how these compounds are chemically structured. Meanwhile 14 young mathematicians "ran riot" in the broad area of games theory. They were given an insight into how it works and its possible applications.



The joy of learning and extending the boundaries of school education are the main focus of the academy.



Burg Fürsteneck provides students with an interdisciplinary-oriented educational concept: besides sports and leisure, this includes majors and electives in chemistry, biology, mathematics, business ethics and cultural studies. All courses are led by university teaching staff and advanced students.



Stimulate enthusiasm for sciences and allow the participants to experience the fascination of chemistry in various facets: after the successful academies in the previous two years, in 2013 the Beilstein-Institut supported the Hessian Student Academy for Middle Schools for the third time.



In the footsteps of Sherlock Holmes: applied chemistry and criminological research working closely together.

In the main course on biology, 11 students took part: under the motto “Dark goings-on in secret” they explored the ground as a complex entity of rocks, air, water and living creatures.

On an equally exciting journey into the unknown, participants of the cultural studies course named “Musical improvisation: reinventing music!” addressed the question of whether one really can spontaneously make music and if so, how. Amongst other things, the course on media culture focused on the power of the media discussing what media there are, how they work

and what role they play in society. In small teams the young editors went in search of suitable topics, surfed and blogged and produced video clips about facts worth knowing about the academy.

As in the previous year, the five main courses were complemented with an extensive elective program. Each attendee was able to choose two additional courses from visual arts, experimental theatre, acrobatics, drumming and photography. In addition, interdisciplinary leisure and sports activities were offered in the program – contra-dance, sport working groups, T-shirt design and introduction to relaxation techniques.



## ENERGY FOR LIFE

Following the successful academies of the previous years, the Beilstein-Institut supported it for the third time in fall 2013. This time Burg Fürsteneck played host to 62 students, who were able to choose a main course from five subject areas – chemistry, art and culture, biology, mathematics and physics. A downright appetite-stimulating title was “Pizza, ice cream and gummy bears.” In the chemistry course, the participants investigated how food provides the energy for life, which nutrients are essential for the human body and which foods supply them. Not only were ready-made dishes scrutinized, the participants also created food products themselves.

In biology, participants took part in a criminal journey of discovery à la Sherlock Holmes, CSI & Co. Using laboratory analyses, they attempted to identify a person from blood, hair, fingerprints, DNA and saliva samples. Quite a different world opened up to the students of the course in art and culture, as they followed Shakespeare’s characters in the sixteenth century. They rehearsed brief scenes from the plays, which right up to the present day have a great influence on theatrical works, and performed them on the stage.

In the mathematics course, an attempt was made to build a bridge between technology and art, with the focus on perspective drawing and the design of geometric structures. The main course in physics ultimately proved to be very practical and useful with students occupying themselves with the planning, building and optimizing of low-energy houses. At the end of their seminar, they investigated whether and to what extent there was potential for energy savings to be made at Burg Fürsteneck.

In 2013, the five main courses were also supplemented with electives from the areas of literature and dance, the visual arts, media studies, drumming and digital photography. These courses received just as much positive feedback as the other leisure-time activities and complemented each other to make a varied, colorful program – giving each participant an excess of “energy for life.”



The tasks are taken from everyday life and solved by science – but not automatically: the students have to contribute and get involved, explore and research to come to an appropriate solution.

To solve the tasks, students have to independently overcome the traditional subject boundaries, such as between chemistry and biology, for example, when it comes to the analysis of blood groups.

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# SCHOLARSHIPS

OUR SCHOLARSHIP PROGRAM IS FOCUSED ON THE HEART OF SCIENCE: BASIC RESEARCH - AN AREA WHICH IS OFTEN NEGLECTED BY FUNDING AGENCIES. WE SUPPORT YOUNG RESEARCHERS AT THE START OF THEIR CAREER WHO CARRY OUT RESEARCH ON TOPICS OF FUNDAMENTAL SCIENTIFIC IMPORTANCE.



As a doctoral student Liana Movsesyan is carrying out basic research at the GSI Helmholtzzentrum für Schwerionenforschung GmbH (Helmholtz Center for Heavy Ion Research) in Darmstadt, Germany. The GSI has its headquarters in Darmstadt where it operates a unique large-scale accelerator for heavy ions. After graduating in her hometown Yerevan in Armenia, Liana decided to continue her research in Darmstadt. Since 2012, the young scientist has been supported with a Beilstein scholarship.

**GSI HELMHOLTZZENTRUM FÜR SCHWERIONEN-  
FORSCHUNG GMBH IN DARMSTADT, GERMANY**



**LIANA MOVSESYAN**



# BEILSTEIN SCHOLARSHIP PROGRAM

“The Beilstein Scholarship is like a springboard for me: it has enabled me to move 4,000 kilometers from Yerevan to Darmstadt to continue my education and carry out research in nanotechnology.”



LIANA MOVSESYAN

GSI HELMHOLTZZENTRUM FÜR SCHWERIONEN-  
FORSCHUNG GMBH IN DARMSTADT, GERMANY →

STOP

# SUPPORTING YOUNG RESEARCHERS

Although basic research does not often make the headlines, without it major scientific sensations would not be possible.

More than financial support: the scholars receive help and support for their professional and personal development.

Since 2012, the Beilstein-Institut has been running a scholarship program for young scientists to carry out their doctoral studies in basic research in chemistry and related disciplines. The aim of the program is to support the participants at the start of their scientific career. It addresses those students who want to devote their doctoral studies to interdisciplinary research projects in biochemistry, chemistry and physics. Apart from the financial support, the Beilstein-Institut seeks to help the scholars further by promoting exchanges with established scientists, the formation of networks and the development of the “scientific personality.”

The application phase for the first edition of the scholarship program ended in March 2012. By then, 25 applicants had signed up – a respectable number underlining the scientific community’s high level of interest in the new program. The proposed research projects were evaluated by external experts. Those students who received positive feedback were invited to present their projects during a symposium at the Beilstein-Institut.

After this second hurdle had been overcome, 15 candidates were accepted into the scholarship program. Amongst the projects were the development of low-cost dye-sensitized solar cells, the neutralization of the greenhouse gas carbon dioxide by sunlight, the production of semiconductor wires of only a few nanometers thickness and the study of pharmaceutically active substances. The scholarship holders in the program, which is based on two 18-month periods, are based at 14 universities and research centers across Germany.

The Beilstein scholarship holders are doing research at different universities, Helmholtz and Max Planck Institutes across Germany.

## SCHOLARSHIP HOLDERS IN FOCUS

In addition to the scientific aspects of the scholarship, the communicative skills of the participants are also addressed. For example, in May 2013, the topic “Scientific publication – how and where do I publish?” was discussed at a scholarship meeting which was also attended by scholarship holders from the NanoBiC project as well as staff of the Beilstein-Institut. Through their work in the editorial office of the Beilstein Journals, the staff members are experts in the field of scientific publications, and were able to report first-hand on important aspects of scientific publishing. They also gave the doctoral students an insight into the work of an editorial office, and thus some helpful tips, such as the correct way to cite literature and to avoid plagiarism.

With interdisciplinary events like this, the Beilstein-Institut aims to provide young academics with a forum to get to know each other, exchange information and build up long-term networks. The organizers of the meeting, Christina Keil and Dr. Carsten Kettner, received very positive feedback from the participants, revealing that the subject met the interest of the young scientists.

In December 2013, it was “half-time” for the Beilstein scholarship holders: an interim evaluation took place at the Beilstein-Institut and the scholars presented the progress of their projects to the foundation. All 15 funded scholars received positive assessments and were accepted for the second funding term of the program.



Dr. Maria Eugenia Toimil-Molares (left) and Professor Christina Trautmann supervise and support the PhD project of Liana Movsesyan at the GSI Helmholtz-zentrum für Schwerionenforschung GmbH (Helmholtz Center for Heavy Ion Research) in Darmstadt, Germany.



## BEILSTEIN SCHOLARSHIP PROGRAM GOES INTO THE NEXT ROUND

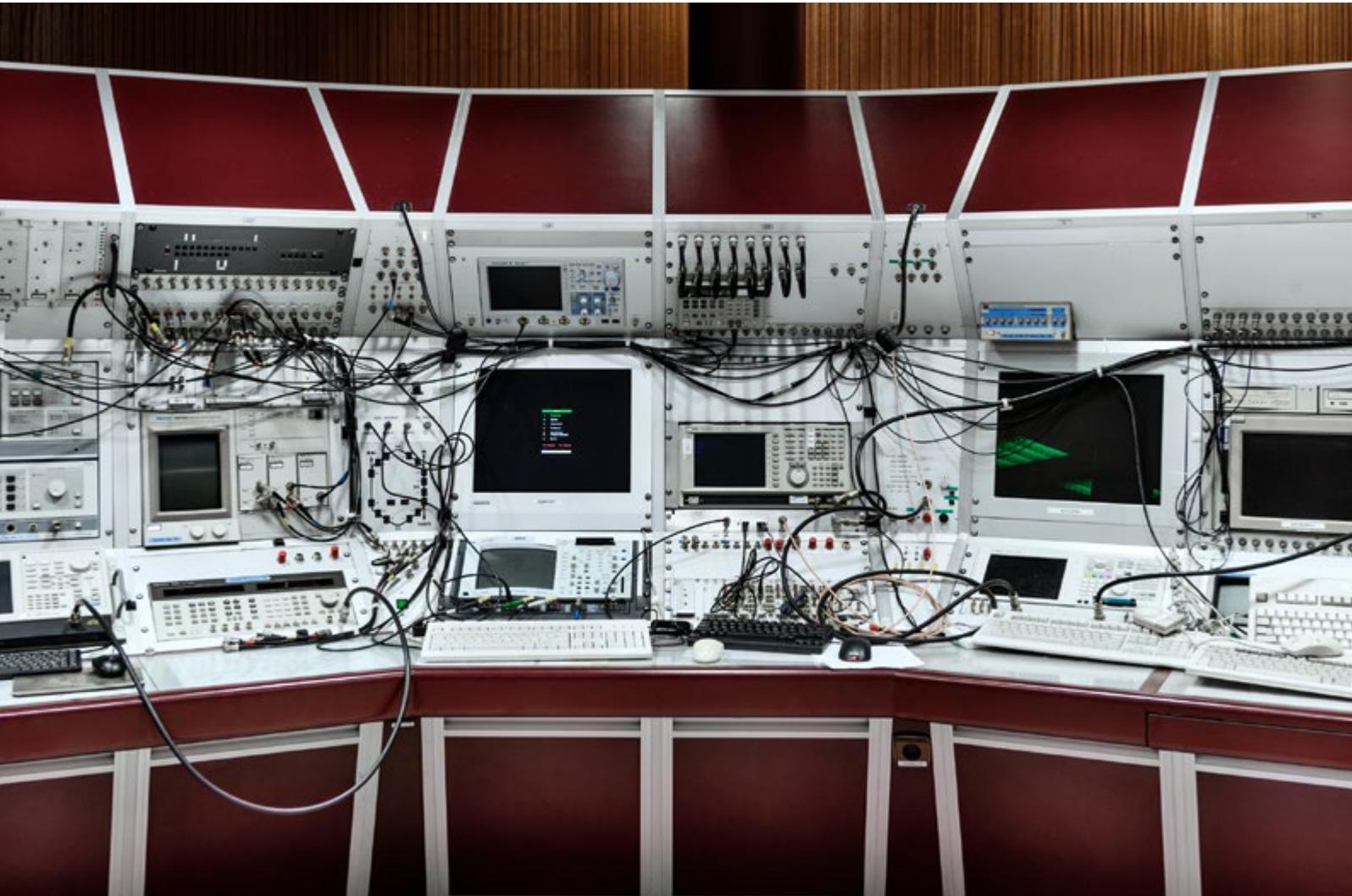
The second round for the scholarship program started in the summer of 2013 with 26 students applying. More than half of them satisfied the formal eligibility criteria. After the assessments of their research projects had been completed, eight doctoral students were accepted into the program in December 2013.

[www.beilstein-institut.de/stipendium](http://www.beilstein-institut.de/stipendium)



Middle: Scholarship awards in June 2012.

Below: In addition to the scholars of the Beilstein program, the scholars of the NanoBiC project and employees of the Beilstein-Institut attended the scholarship meeting in May 2013.



Beilstein scholarships are awarded for a period of up to three years with an interim evaluation after 18 months. The maximum age for acceptance into the program is 25 years; the financial support is 1,650 euros per month.

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# RESEARCH, TEACHING AND PUBLICATION ACTIVITIES

THE UNIVERSITIES AND THEIR RESEARCH FACILITIES GET NEW IMPULSES: OUR ENDOWED CHAIRS ARE A MODERN FORM OF SCIENCE FUNDING PROVIDING FURTHER OPPORTUNITIES FOR THE ACADEMIC RESEARCH COMMUNITY WITH THEIR INTERDISCIPLINARY ORIENTATION.

With the establishment of the endowed chair, the Beilstein-Institut supported Frank Schulz in his research into new strategies for the synthesis and modification of natural products at the TU Dortmund University. He was a speaker at the Beilstein Bozen Symposium, has published his research results in the Beilstein Journal of Organic Chemistry and holds a chair of Organic Chemistry at the Ruhr-Universität in Bochum since October 2013.

RUHR-UNIVERSITÄT BOCHUM



PROFESSOR FRANK SCHULZ

# BEILSTEIN ENDOWED CHAIR

“Thanks to the support of the Beilstein-Institut,  
I was able to implement the projects which  
I had dreamed of as a post-doc.”



PROFESSOR FRANK SCHULZ

RUHR-UNIVERSITÄT BOCHUM →



# NEW WAYS FOR SCIENCES

Endowed professorships play an important role in many areas of university research. They support research in exactly defined areas, sharpen the profile of universities as innovative research facilities and, last but not least, mean important recognition of the professor with his or her often novel ways of thinking and approaches.

## Role model for inter- disciplinary exchange: Gisbert Schneider

The Beilstein-Institut has funded two endowed chairs since 2002. The first was a professorship over five years donated to the Goethe University in Frankfurt am Main. The focus of the research was to be the interdisciplinary exchange between chemistry, theoretical chemistry and pharmacy in the area of chemical informatics. The chair was awarded to Professor Gisbert Schneider, an excellent representative of his field. Together with his group he devoted himself to a wide range of important tasks ranging from active substance research on pain receptors to the synthesis of libraries of natural product derivatives.

In recognition of this important new research area, the Goethe University took it over in 2007 and transferred the chair into the regular operations of the university. The professorship was also an important stage for the university career of Gisbert Schneider. In 2010 he followed the call to the ETH Zurich as professor for computer-assisted drug design.

An important aspect of the endowed chair at the Goethe University was the “Beilstein Computer Center (BCC)” which was set up in 2003. Since then, it has been in continuous use to improve the subject-oriented training of students of chemistry and bio-informatics at the Riedberg site in Frankfurt am Main.



Since ten years the Beilstein Computer Center has become a part of the educational training at the Goethe University.

## RESEARCH ON THE WAY TO PHARMACEUTICAL APPLICATION: FRANK SCHULZ

After the positive experience of the first endowed professorship, the Beilstein-Institut established a second chair at the beginning of the winter semester 2009/2010 at the TU Dortmund University. There Frank Schulz focused on research into new strategies for the synthesis and modification of natural products: the objective was to obtain “natural-product-like” compounds for the development of active substances used in antibiotics and anti-tumor agents. Professor Schulz’s research group, which started in 2009 with two employees, had grown to 12 members by 2013 – post-docs, doctoral students, masters and bachelor students. Under the supervision of Frank Schulz, the chemists, biochemists and pharmacists of the group successfully brought a series of projects to completion.

During his time at the TU Dortmund University, Professor Schulz started a number of scientific collaborations, for example, with the Max Planck Institute for Coal Research in Mülheim, the Institute of Organic Chemistry in Karlsruhe, the Chemical Genomics Centre in Dortmund and the Fraunhofer Institute for Molecular Biology and Applied Ecology in Aachen.

This time the funding covered a time period of two terms of three years with a volume of 650,000 euros per term. The intermediate evaluation in July 2012 was concluded with a positive result. All project objectives had been achieved or surpassed, and Frank Schulz had successfully established himself and his research work in the scientific community. The Beilstein endowed chair was an important career step for Professor Schulz who in October 2013 took on a full professorship at the Ruhr-Universität in Bochum.

The search for new antibiotics and anti-tumor agents from natural sources was the focus of the work of Professor Frank Schulz at the TU Dortmund University.





Professor Frank Schulz (left) received the Thieme Chemistry Journal Award in 2012 for his research work.

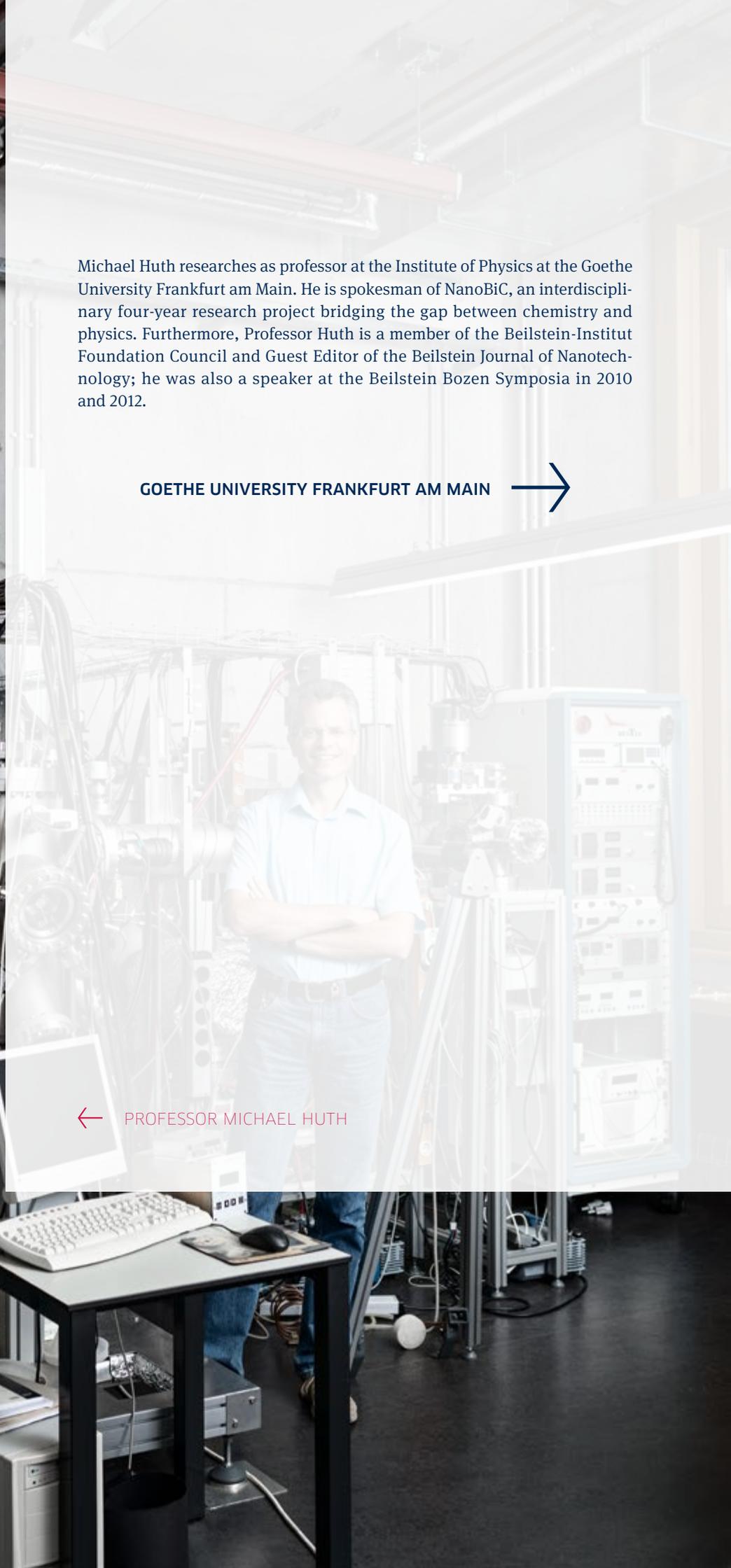




Michael Huth researches as professor at the Institute of Physics at the Goethe University Frankfurt am Main. He is spokesman of NanoBiC, an interdisciplinary four-year research project bridging the gap between chemistry and physics. Furthermore, Professor Huth is a member of the Beilstein-Institut Foundation Council and Guest Editor of the Beilstein Journal of Nanotechnology; he was also a speaker at the Beilstein Bozen Symposia in 2010 and 2012.

GOETHE UNIVERSITY FRANKFURT AM MAIN →

← PROFESSOR MICHAEL HUTH



# NANOBiC

“With the funding through scholarships and for material resources, the Beilstein-Institut has successfully supported the interdisciplinary cooperation of chemists, physicists and materials scientists in the framework of NanoBiC.”



PROFESSOR MICHAEL HUTH

GOETHE UNIVERSITY FRANKFURT AM MAIN →

# NANOBiC

## COLLABORATION IN RESEARCH

Many chemical compounds show different physical properties on a nano-scale compared to the macro-molecular world. The decoding of these processes generates new knowledge that is of essential importance in many areas – for example, in technical applications such as ultrafine sensors, extremely dense data storage devices or novel micro-magnetic and self-illuminating components.

The exploration of the nano-scale worlds requires a multidisciplinary approach. NanoBiC brought together the four key disciplines nanotechnology, biology, chemistry and computing. The four-year research project, which started in 2009, involved scientists from chemistry, physics and materials science at the Goethe University in Frankfurt am Main, the Technische Universität in Darmstadt, the GSI Helmholtzzentrum für Schwerionenforschung GmbH (Helmholtz Center for Heavy Ion Research) in Darmstadt and the Frankfurt Institute for Advanced Studies. Within the framework of NanoBiC (Nano, Bio, Chemistry and Computing) it was possible to offer an ideal setting for a wide range of collaborative sub-projects. The central theme was the effect of high-energy radiation on objects in the nanometer range.

With a total sponsorship of 3.6 million euros over four years, NanoBiC had two main project areas: firstly, to examine how it is possible to construct functional elements exactly according to a blueprint – such as transistors, sensors, quantum dots or storage elements; secondly, to explore the effects of cosmic radiation on human cells in more detail – this is of great significance for manned space missions, for example.

NanoBiC brings together the four key disciplines nanotechnology, biology, chemistry and computing.

NanoBiC comprised seven sub-projects each examining how matter in its smallest dimensions reorganizes itself when certain particles are irradiated. The initial results of NanoBiC already showed that the intended interdisciplinary approach was successful and led to unexpected findings. The interim evaluation in September 2011 confirmed the positive results.

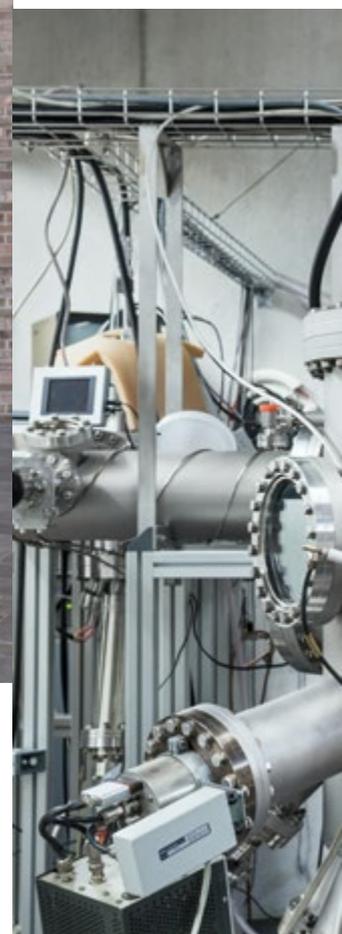
## Bridging the gap between chemistry and physics: at the level of research as well as in terms of scientific publications.

NanoBiC involved not only the specific collaboration of scientists, but also resulted in the publication and discussion of the research results. The project initiated, among other things, the Thematic Series “Radiation-induced nanostructures: Formation processes and applications” in the Beilstein Journal of Nanotechnology. Professor Michael Huth from the Institute of Physics at the Goethe University, the spokesman of the research project, was Guest Editor of this series. In addition, NanoBiC was present at scientific events: at a spring meeting of the German Physical Society held in March 2012 in Berlin, for example, two sessions on the topic of “Focused electron beam induced processing for the formation of nanostructures” were initiated by Michael Huth. About 100 participants attended both events – in total, ten lectures provided a detailed overview of the current state of research.

NanoBiC was also active in supporting young scientists: 34 scholarships – including 13 post-doctoral and 21 postgraduate students – received funding in 2012 alone. In May 2013, the Beilstein-Institut hosted a scientific colloquium, where the scholars presented their work and discussed it with the auditorium. This proved to be an excellent forum for exchanging ideas and networking.

With the scheduled project funding through the Beilstein-Institut coming to an end, it can be seen that NanoBiC has an important impact spreading on the scientific community: the project has generated more than 100 publications in renowned scientific journals. Numerous presentations at international conferences made references to NanoBiC and a patent was filed. There are nearly 100 scientists across Europe who are associated with NanoBiC. They will continue their joint research in the future.

Matter in smallest dimensions is able to reorganize itself when particles are selectively irradiated. In seven sub-projects NanoBiC examined the physical principles governing these processes.



Representatives of the institutions involved in NanoBiC – Goethe University in Frankfurt am Main, Technische Universität Darmstadt, GSI Helmholtzzentrum für Schwerionenforschung GmbH (Helmholtz Center for Heavy Ion Research) in Darmstadt and Frankfurt Institute for Advanced Studies in Frankfurt am Main – worked closely together to advance the project. The picture shows (from left to right) Professor Roser Valenti, Professor Michael Huth, Professor Max C. Holthausen, Professor Wolfgang Ensinger, Professor Matthias Wagner and Professor Andreas Terfort.



**Dr. Maria Eugenia Toimil-Molares (left) and Professor Christina Trautmann supported the NanoBiC project at the GSI Helmholtzzentrum für Schwerionenforschung GmbH (Helmholtz Center for Heavy Ion Research) in Darmstadt.**

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# FINANCIAL SITUATION AND FUNDING VOLUME

The asset management of the Beilstein-Institut is focused on capital preservation and on the maintenance of the continuity of the foundation's operations. Decision-making is based on objective criteria. From the determination of the distribution of assets amongst different asset classes down to single purchases or sale decisions, each alternative action is carefully assessed regarding its expected contribution to achieving the targets.

The foundation controls its investments by itself without involving external asset managers ensuring a cost-efficient and transparent investment policy. The operational framework for the foundation's internal asset management is given by the "Principles and objectives of asset management" and by the investment policy authorized by the Board of Management. Each investment decision is made according to a rule-based system.

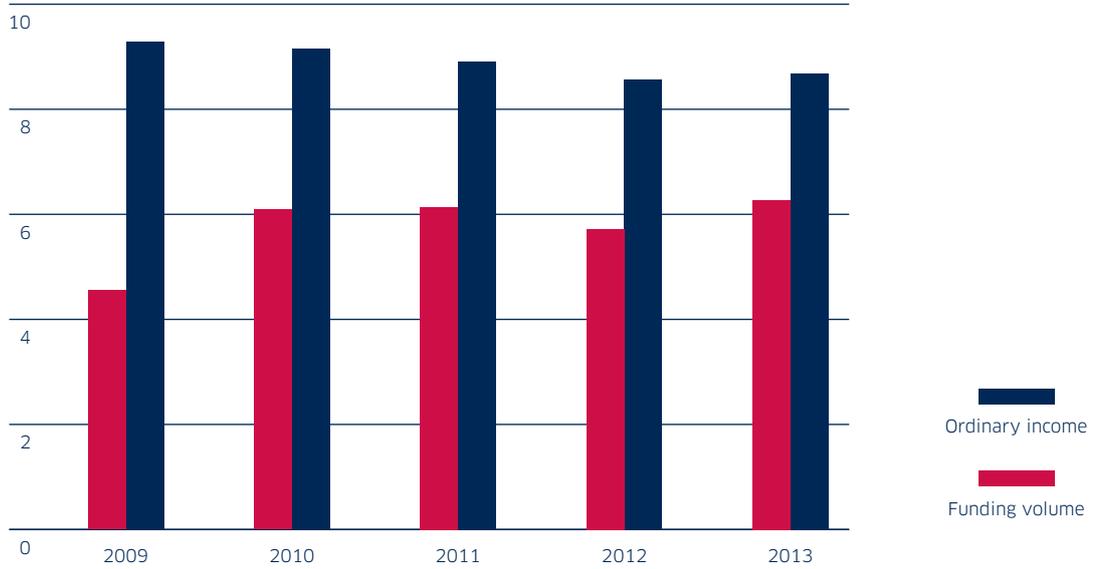
Risk controlling is based on continuous record keeping at market prices and on regular internal capital market and securities analyses.

A "steady hand" investment policy is pursued focusing on a long-term investment horizon. In addition to the capital preservation, a steady cashflow to secure the continuous funding of the foundation's projects is also an investment objective. The core of the portfolio consists of high grade fixed income securities. The time to maturity allocation follows a rolling 10- to 15-year strategy, which reduces the reinvestment risk on the one hand and minimizes the costs of the investment on the other. Up to 50 % of the foundation's assets can be invested in stocks. Stock selection is based on a fundamental analysis with a particular focus on the sustainability of dividend payments. Investment in real estate is executed via real-estate investment trusts (REITs). On the basis of the current allocation, a further increase of the stock and real-estate quota is envisaged in the medium term.

## INVESTMENT ALLOCATION (AT MARKET PRICES) 2009 TO 2013, IN EUR MILLION

	2009	2010	2011	2012	2013
Bonds	207.1	202.8	196.3	207.3	201.3
Stocks	14.5	16.1	16.1	20.5	34.2
REITs + property	0	0.4	0.8	2.7	5.6
Fixed-term deposits/cash	15.3	23.3	32.1	27.5	16.4
<b>Total</b>	<b>236.9</b>	<b>242.6</b>	<b>245.3</b>	<b>258.0</b>	<b>257.5</b>

### ORDINARY INCOME WITHOUT GAINS AND LOSSES FROM ASSET REBALANCING AND FUNDING VOLUME, IN EUR MILLION



The main focus of funding activities was on the publication of journals, on the support of endowed chairs and on the joint research project NanoBiC.

### FOUNDATION INCOME FROM ASSETS, IN EUR MILLION

	2009	2010	2011	2012	2013	Total
Income from licenses/royalties	0.24	0.10	-	-	-	0.34
Income from shareholdings and from securities carried forward as fixed assets	8.63	8.76	8.54	8.16	8.48	42.57
Other interest income (fixed-term deposits)	0.42	0.30	0.37	0.40	0.19	1.68
Total	9.29	9.16	8.91	8.56	8.67	44.59
<b>Financial volume for funding</b>	<b>4.55</b>	<b>6.09</b>	<b>6.14</b>	<b>5.72</b>	<b>6.36</b>	<b>28.86</b>

# ANNUAL FINANCIAL STATEMENTS 2013

The annual financial statements are based on the commercial code for incorporated companies, in particular taking into account the laws governing foundations and the tax laws for non-profit organizations. The annual financial statements were audited by KPMG AG Wirtschaftsprüfungsgesellschaft and an unqualified opinion was issued.

The assets include financial investments of 217.7 million euros and liquidity of 16.7 million euros. The hidden reserves – resulting from the bond and stock portfolio – amount to approximately 20 million euros and are not assigned. The equity capital of the foundation comprises primarily the foundation's assets of 196.9 million euros, the "Umschichtungsrücklage" (reallocation reserves) of 1.5 million euros, "freie Rücklagen"

(free reserves) of 26.7 million euros and accruals of 13.2 million euros. Equity capital arose from the initial capital (capital contribution of the founder Max Planck Society amounting to DM 1,000), the results of the scientific work of the Beilstein-Institut on the handbook and database production and the income from asset management. The function of the free reserves is to help compensate the negative effects of inflation on the value of the foundation's assets.

Accruals of 12.6 million euros relate essentially to the pension provisions made for 138 former employees as well as 88 candidates. The evaluation was carried out using an interest rate of 3.5 % and an inflation rate of 2 %.

## BALANCE SHEET (SUMMARY) IN EUR MILLION

Assets	2013	2012
Fixed assets	217.74	203.53
Financial assets	217.74	203.53
Current assets	21.08	32.13
Receivables and other assets	4.38	4.58
Liquidity	16.70	27.55
Accruals and deferrals	0.56	0.71
<b>Total</b>	<b>239.38</b>	<b>236.37</b>

Liabilities	2013	2012
Equity capital	225.09	221.52
Assets of the foundation	196.90	196.90
Reallocation reserves	1.51	0.50
Free reserves	26.68	24.12
Accruals	13.15	12.49
Liabilities	1.14	2.36
<b>Total</b>	<b>239.38</b>	<b>236.37</b>



# FOUNDATION COUNCIL



Deputy Chairman of the Foundation Council  
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Chairman of the Foundation Council  
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Dr. Ulrike Mattig



Professor Arndt Simon



Professor Michael Huth



Rainer Daum



Gernot Frank



Professor Fred Robert Heiker



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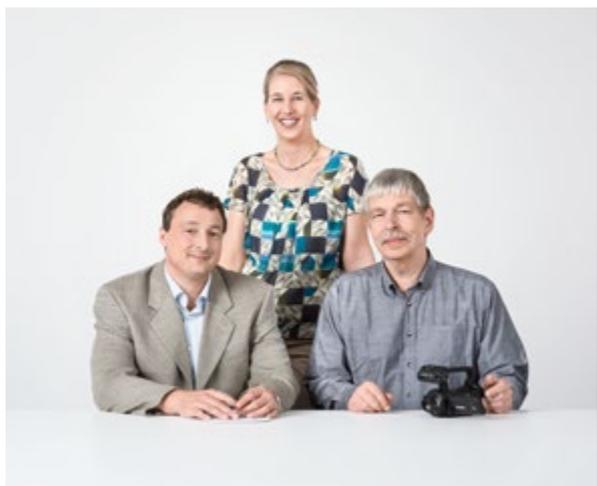
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Editorial office  
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# IMPRINT

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