Karlsruher Institut für Technologie

YIN-Update 2013/2014

The strong network of
junior research group leaders at KIT

YIN – YOUNG INVESTIGATOR NETWORK

KIT – Universität des Landes Baden-Württemberg und
nationales Forschungszentrum in der Helmholtz-Gemeinschaft

EDITORIAL

Dear Reader,

It has been 6 years since the Young Investigator Network (YIN), the self-governing network of junior research group leaders at KIT, was formed. Since its creation, YIN has established itself as a successful association, connecting the young scientists at KIT by building a platform where they can interact both scientifically and socially. YIN also provides an excellent program of continuing education to its members and sponsors interdisciplinary collaborations.

Keep in touch! Our continuing success relies on communication with and between our members. We provide a framework that allows YIN-members to meet each other on a regular basis and have the chance for an open scientific exchange, both professionally and personally. This exchange takes place in a surrounding that encourages non-competitive support, confidentiality and personal development.

Keeping in touch also means that YIN wants to make sure current members and alumni have the opportunity to meet regularly. Therefore, we organize our annual YIN-Day. To that end, we have also created this YIN-Update 2013/2014.

On the next pages, you will find statistics about YIN, summaries of YIN-Grants, an introduction of our new members, a list of members that have changed to alumni and details about upcoming activities. This newsletter has been a collaborative effort and we would like to thank all of the individuals for their contributions.

We wish you an interesting and enjoyable read.

Dr. Lars Bauer Dr. Erin Koos Karina Scholpp

FOREWORD

Dear Reader,

The junior group leaders at KIT make a significant contribution to scientific advancement in teaching, research and innovation.

To support them in the best possible way, much is being done at KIT – establishing the Young Investigator Network is a measure that was already developed along with the KIT Institutional Strategy in 2006. Since its creation, YIN has evolved into a real success story. It offers the KIT junior group leaders a platform for transdisciplinary cooperation, exchange of experiences, and thus for personal development. Networking of this kind inspires research and teaching of our junior group leaders in a variety of ways.

Prof. Dr. Alexander Wanner
KIT Vice President for Higher Education and Academic Affairs

It is also important to us that our junior group leaders take responsibility early and that this becomes visible as well. With the instrument of the "KIT Associate Fellow" we enable junior group leaders already in early stages of their research careers to be the main advisors of doctoral candidates. I am pleased as this relatively new instrument finds acceptance and is being used more and more.

I congratulate YIN and its members on the progress achieved and wish the network continuing positive development!

Prof. Dr. Alexander Wanner

OUR MISSION

YIN, the network of all independent junior group leaders at KIT, is after more than 5 years a well-established institution at KIT. It was founded in 2008 at the start of the German Excellence Initiative (see *www.yin.kit.edu/downloads/YIN-Jahrbuch2013.pdf* for a history of YIN). The initiative has expired, however, YIN has become an integral part of KIT.

YIN in motion

This is our mission:
We are devoted to ***making KIT the ideal place for young scientists*** *to thrive in their research pursuits and to become recognized researchers in their respective fields.*

To achieve this, all YIN-members meet regularly in plenary sessions to exchange experiences, identify common research interests and start collaborations. We invite high-profile guests to share their knowledge and insight on academic topics that are relevant to us. In three cross-disciplinary research areas – Simulation and Computation, Multi-Scale Science and Life Science – YIN-members meet in smaller groups with the clear target to start research collaborations.

We are devoted to ***encouraging each YIN-member to become a better group leader.***

YIN-members can take part in various professional continuing education courses that were tailored by YIN and the department of Human Resource Development and Professional Apprenticeship (PEBA), to specially suit the needs of YIN-members. These courses aim to improve the leadership abilities as well as research and teaching performance of the participants. YIN-members can also obtain valuable feedback from professional coaches.

We are devoted ***to representing the interests of all independent young investigators at KIT.***

We have successfully helped to introduce well-defined standards for the "KIT-Nachwuchsgruppe" (KIT-Junior Research Groups) at KIT. We have contributed to the establishment of the "KIT Associate Fellow" status which allows independent group leaders to supervise their doctoral students including the doctoral exam. Together with university officials, we have worked on a "Multi-Track" system at KIT that was designed to establish a clearly defined pathway from an independent group leader to a tenure track position at KIT.

In addition, we build and maintain a strong network with former YIN-members – both in academia and industry – that enables a prolific exchange. We communicate news and our next targets via a regular YIN-annual or YIN-Update; we organize an annually YIN-Day with external guests, panel discussions and scientific exchange in poster sessions.

In short, YIN at KIT is a win-win proposition: YIN is an unique platform for scientific and professional exchange that boosts early careers of excellent young scientists making the KIT an ideal place to make a successful transition from post-doc to professor. In turn, YIN makes KIT an especially attractive place for top young investigators to become independent and recognized researchers in their fields.

Dr. Peter P. Orth

Dr. Christian Greiner

Dr. Stefanie Speidel

PD Dr. Alexander Nesterov-Müller

Dr. Pavel Levkin

FACTS AND FIGURES 2013

(The following data was compiled from the YIN-survey 2013: 36 out of 59 members participated.)

Members

The number of YIN-members has been fluctuating around 60 for the last few years, as shown in Fig. 1. However, the number of new YIN-members has declined slightly after the end of the Excellence Initiative at KIT, which was funding many research groups. The requirement to be a part of YIN is to be the head of an independent junior research group at KIT consisting of at least one fully funded doctoral student. Since many YIN-members choose to become active YIN-alumni after they find a permanent position, we see a constantly growing number of alumni with a current count of 36.

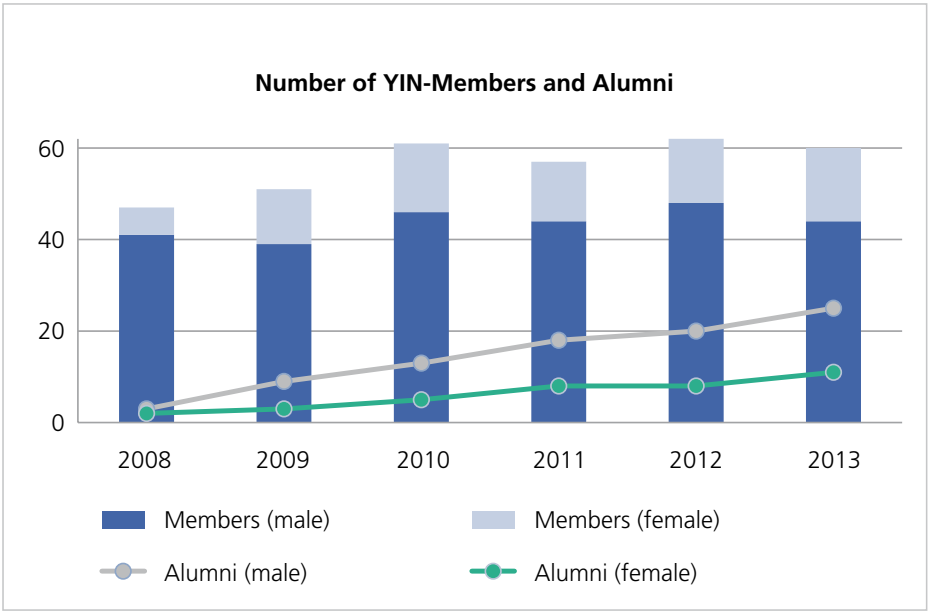


Fig. 1: Number of YIN-members and alumni since 2008

Throughout the years, the fraction of female YIN-members was 27 %, which is high compared to the fraction of female professors in total (19 %), natural sciences (12 %) and engineering (9 %) professors in particular. Furthermore, 28 % of all YIN-members have an international background; the majority hail from European countries, others come from the USA, Australia, Russia or China.

Professorship appointments in 2013

In 2013, four YIN-members received a call for professorship: two as full-professors, one as an associate professor and the fourth as an assistant professor.

An important aspect of a successful career development is the valuable continuing education offered by the department of "Human Resource Development and Professional Apprenticeship" (PEBA) to our YIN-members. For the culmination of special courses the "Academic Leadership" certificate was awarded to five members at the YIN-Day 2013.

Areas of expertise

YIN-members are divided into four areas of research: the main group (55 %) works in natural sciences, followed by 23 % in computer science and mathematics, 18 % in the field of engineering and 3 % of the YIN-members works in economics and humanities.

Types of Groups

There is a variety of different group types united within YIN. A significant number of them are still financed by funds allocated from the excellence initiative: 14 Young Investigator Groups, 3 KIT-Shared Research Groups and 2 KIT-Research Groups. In addition, there are 8 YIN-members that lead a Helmholtz Young Investigator Group. We also have many YIN groups that are completely funded from external sources such as Federal Ministry of Education and Research (BMBF) (3), German Research Foundation (DFG) Emmy Noether-Program (6) and European Research Council (ERC) Starting Grant (4). There are 6 Junior

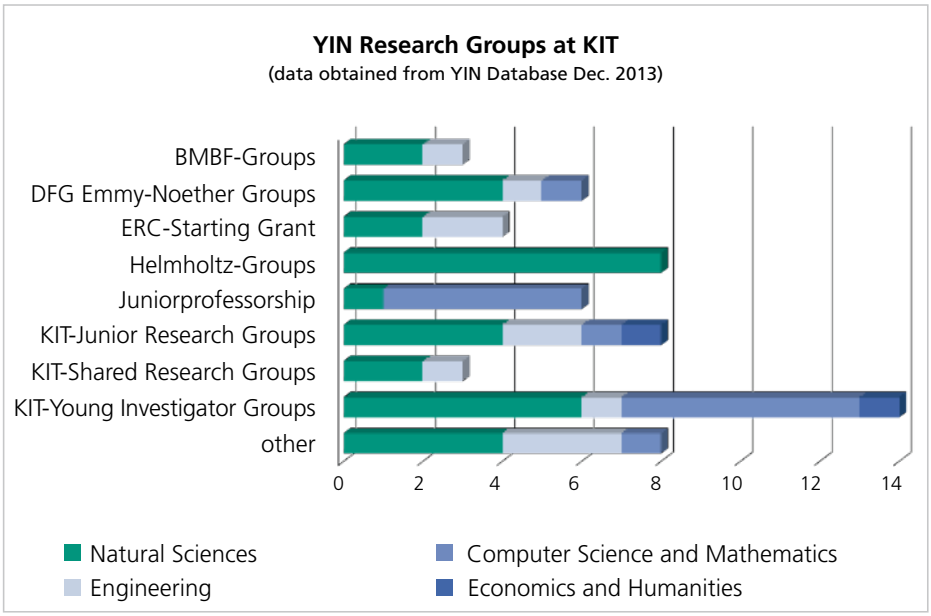


Fig. 2: YIN research group types plotted against different areas of research

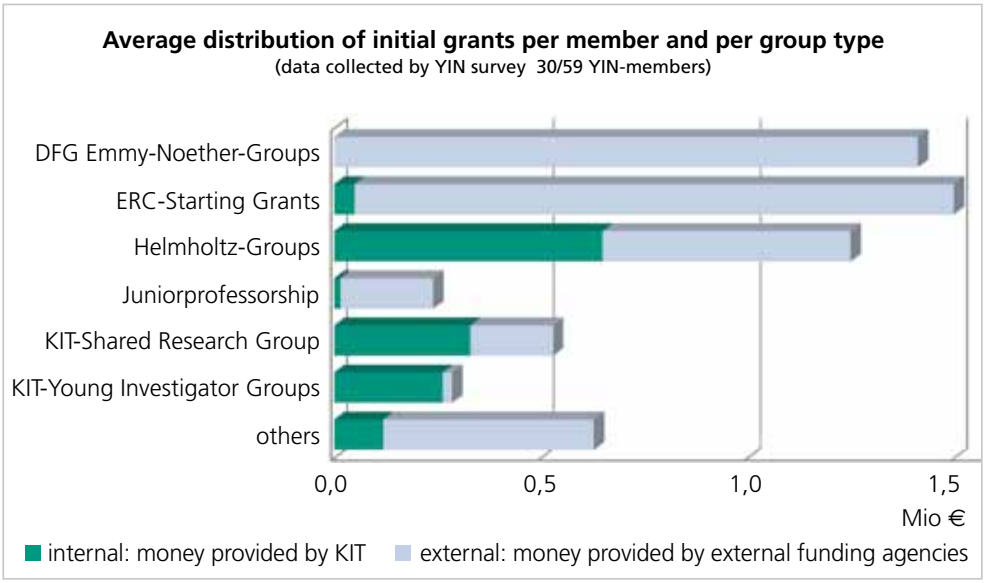


Fig. 3: Amount of initial grant money per group type

Professors and 8 Leaders of a KIT-Junior Research Group (KIT-Nachwuchsgruppe) in YIN. Other YIN groups are funded by the state of Baden-Württemberg (Margarete von Wrangell Program), the DFG (Heisenberg Grant), Center for Functional Nanostrucutres Funding and EU funding (Marie Curie Grant). An overview of the different group types is shown in Fig. 2.

The amount of initial grant money for the different funding types varies from 80,000 € per year to 1.7 Mio € over five years. The duration of the junior research groups at KIT is between three and six years. The largest funding is granted by the ERC Starting Grant, followed by the DFG Emmy Noether-Program and the Helmholtz Groups as shown in Fig. 3.

Subsequent Funding

In addition to the initial funding of the groups, YIN-members (28 respondents) have acquired a substantial amount of additional funding, in total 6.7 Mio. €. The vast majority, about 96 % of these grants, is provided by external funding agencies such as the DFG. The remaining 4 % are contributed by industrial partners and the KIT in approximately equal parts.

Staff

The 36 (out of 59) YIN groups that participated in this survey encompass a total of 297 staff members, including 32 postdoctoral researchers, 110 doctoral candidates, 51 diploma/master students, 36 bachelor students and 37 student assistants. In addition, the groups employ 13 technicians, 9 guest scientists and 9 trainees. The average group size is 6.1 members.

Teaching and supervised theses

In the SS 2013 and WS 2013/14, YIN-members contributed a total number of 181 weekly course hours (SWS) as part of the regular teaching schedule at KIT. Specifically, they taught 101 SWS in lectures, 41 SWS in practical training courses, 13 SWS in tutorials and 26 SWS in seminars. YIN-members are often inspired to teach out of their own accord and interest, without having specific teaching duties. In addition to regular teaching, YIN-members also supervised many students in research activities. In 2013, students of YIN groups defended 21 doctoral theses. In nine cases the YIN-member also was the main thesis reviewer. The recent introduction of the KIT Associate Fellow status, which is quite popular among YIN-members, has enabled the members to be a second or third reviewer in 8 additional cases. Furthermore, there were 48 diploma and master theses as well as 47 bachelor theses prepared by students in YIN groups. In about two thirds of the cases for diploma/master theses and half the bachelor theses, the YIN-member was able to act as the official main reviewer. The ability to officially supervise theses has repercussions for the careers of young academics and we would like this number to increase. An overview of this data is shown in Fig. 4.

Publications and H-Index

A total of 161 papers and articles were published in 2013 for the 36 (out of 60) groups that participated in this survey. The average Hirsch-index of YIN-members is 12.3 with a standard deviation of 4.6; the differences mainly depended on the discipline of the YIN group.

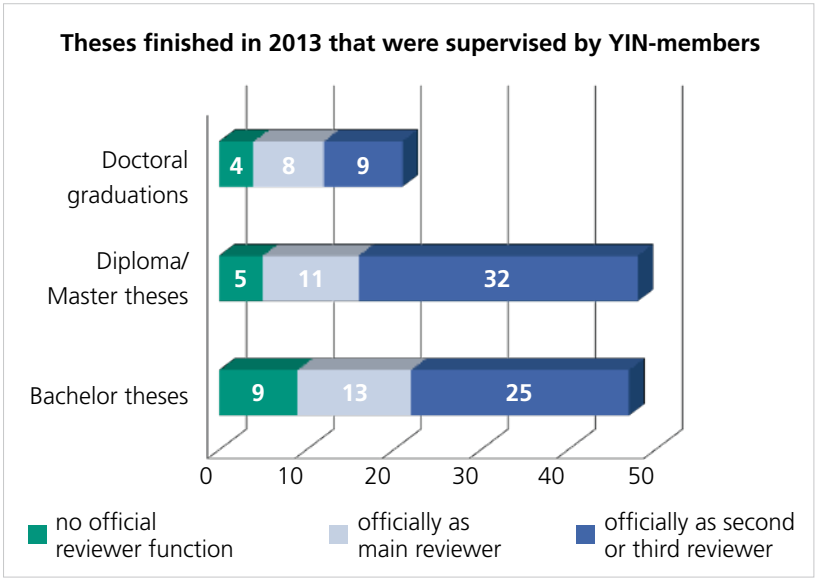
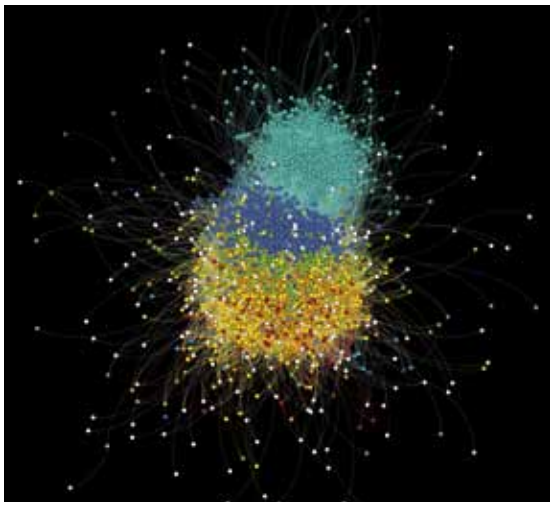


Fig. 4: Number of theses that were finished in 2013 and supervised by YIN-members

CLUSTER I

"Computation and Simulation" has been formed to bring together the expertise of all YIN-members who work in the field of simulation and modeling as well as in computer science. The first meeting of the cluster was held in April. In addition to the generation of several ideas for future collaboration, the participants of the cluster also suggested the implementation of a meeting or seminar series for graduate students working in these fields. The idea behind such a meeting is that while the individual research topics of each group might differ significantly, they face similar challenges when it comes to topics like the maintenance of software code or the homogenization of information in multiscale modeling. Pooling the know-how in those areas from all groups and learning from each other could certainly yield a significant benefit for all participants. All YIN-members who are interested in joining this cluster are very welcome to do so.



Example for visualizing Facebook friendships of the Smith College members in the United States 2005. The colors indicate the student's final year and the large group at the top represents new students.

CLUSTER II

"Multiscale Science" wants to bring together all YIN-members whose research is focused around solid bodies. Examples range from the experimental or theoretical treatment of two-dimensional materials like graphene over the fabrication of lightweight components for aerospace applications to mechanical engineering challenges in production science. The YIN-members represented in this cluster span the entire range from nano- to the macro-scale for both the simulation and modeling as well as the experimental side. A first meeting of this cluster was held at the end of September. Examples for ideas for joint research projects range from the novel application of synchrotron radiation to the innovative use of continuum dislocation modeling in complex materials. Future activities of this cluster will include the next meeting at the beginning of 2015. Moreover, some of its members might also try to find common ground for joint teaching activities. All interested YIN-members are very welcome to join!

CLUSTER III

"Life Science" brings together all members interested in the interaction between biological materials and any kind of surface or interface. The biological materials range from individual proteins to different kinds of cells in contact with chemically and/or morphologically textured surfaces. The experimental methods represented go from standard optical microscopy to complex biological techniques as well as the use of synchrotron radiation. This impressive spectrum of materials and methods was also represented at the cluster's first meeting on May 14th, during which a considerable number of interesting collaborations were identified and individual research teams formed. Other YIN-members will assuredly also find interesting collaborations within this cluster; new participants are especially welcome. The next meeting will be held towards the beginning of the winter semester.

YIN-DAY 2014

This year's YIN-Day on October 17th starting at 2:30 pm will be an internal meeting of current members and alumni with a focus on scientific networking and exchange. The tentative program includes an invited keynote by our alumnus Prof. Chris Eberl, presentations from the YIN clusters focusing on transdisciplinary exchange and a poster session where YIN-members have the opportunity to present their research. We will conclude the evening with a social event planned to start at 6:30 pm.

More information about YIN events is available at: www.yin.kit.edu/26.php

YIN-MEMBER-MEETING WITH SPECIAL GUEST

At the YIN-member meeting on Wednesday 19 November 2014, we have the pleasure to welcome "Ministerialdirektorin" Dr. Simone Schwanitz to KIT.

We are very glad that she will take the time to visit our meeting and speak to us about questions concerning junior research group leaders.

ALUMNI-DATABASE

YIN would like to establish an alumni-database to strengthen the connection between YIN-members and alumni. The aim is to find alumni that are willing to contact YIN-members who have confidential questions concerning their future career options. The database is restricted to YIN-members and alumni only and is supposed to contain information about the current position and competence areas of the alumni. We will contact all alumni shortly and hope of strong response.

YIN AT KIT HUMBOLDT-DAY 2014

The Humboldt Day 2014, organized by the International Scholars & Welcome Office (IScO), took place at KIT for the tenth time. This day gave Humboldtians and interested junior research group leaders the possibility for transdisciplinary exchange and networking. Our representative speaker Dr. Peter P. Orth and the speaker of the committee of Public Relations PD Dr. Alexander Nesterov-Müller had the chance to inform the attendees about YIN, its excellent continuing education and the experience of cooperation of young scientist at YIN and KIT.

YIN-DAY 2013

Last year's YIN-Day celebrated YIN's 5th anniversary. Dr. Elke Luise Barnstedt (KIT Vice President for Human Resources and Law) and Dr. Frank Mentrup (Mayor of Karlsruhe) gave introductory greetings. A total of 61 posters and several presentations illustrated the scientific range of YIN and highlighted its history. Another central point of the event was the panel discussion about "Careers in the jungle of the German science system" with Prof. Dr. Horst Hippler (president of the German Rectors' Conference), Prof. Dr.-Ing. Detlef Löhe (KIT Vice President for Research and Information), Wilfried Porth (member of the Board of Management of Daimler AG) and Prof. Dr. Dorothea Wagner (DFG Vice President).

YIN-SCIENCE AWARD WINNERS 2014

The YIN-Science Award 2014 with the allocated grant of 5,000 € each was awarded to four YIN-cooperations. We congratulate:
– Dr. Guillaume Delaittre and Dr. Clemens Grabher
– PD Dr. Alexander Nesterov-Müller and Dr. Julia Syurik
– Dr. Steffen Scholpp and Dr. Alexander Schug
– Dr. Katrin Schulz and PD Dr. Kai Weidenmann.

FROM INFLAMMATION TO NEURODEGENERATION

Dr. Clemens Grabher & Dr. Tobias Jochum (YIN-Grant)

The Grabher and Jochum labs focus their research on the genetic elucidation of inflammation and neurodegenerative diseases. It is of great interest to acquire a comprehensive view of innate immune responses, as many modern diseases such as atherosclerosis, asthma, neurodegenerative diseases, autoimmune diseases and cancer, feature inappropriate or exaggerated inflammatory processes. The Grabher lab identifies factors involved in inflammation and elucidates their roles by genetic means. As with most neurodegenerative diseases, Spinal and Bulbar Muscular Atrophy (SBMA) is lacking an effective therapy. The aim of the Jochum lab is to provide new insight into pathological misfolding and aggregation of the androgen receptor in SBMA. Both groups apply YIN molecular biology techniques for their research. Genetic elucidation and validation of the mentioned processes require analytical techniques for reliable measuring of nucleic acid and protein concentrations within limited sample material. Fast and precise measurements of nucleic acid and protein concentrations are facilitated through the use of the NanoDrop device funded by YIN for this collaborative proposal.

SCREENING STEM CELL BEHAVIOR IN 3D

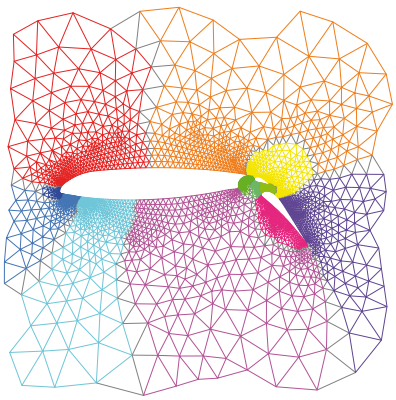
Dr. Cornelia Lee-Thedieck & Dr. Pavel Levkin (YIN-Science Award)

This project aims at developing a new method to screen stem cells in three-dimensional (3D) environments on the single-cell level. With the results of our work we want to gain a deep understanding of how stem cells are influenced by biological, chemical and physical factors in 3D. Blood forming hematopoietic stem cells (HSCs) are the life long source for all types of blood cells. Transplantation of HSCs is a life-saving therapy for patients suffering from hematological disorders such as leukemia. Multiplication of HSCs in the laboratory would be an elegant approach to fulfill the increasing demand for HSCs. To date, this has not been achieved to a satisfying extent. The only place where HSCs can proliferate while keeping their stem cell character is their natural microenvironment – their niche – in the bone marrow. The discrepancy between the efficient in-vivo-maintenance of HSCs and the relatively poor performance of state-of-the-art cell culture systems indicates that for successful HSC multiplication the artificial systems need to approximate the natural one. Therefore, the aim of the project is to gain a deep understanding of how HSCs are influenced by different biological, (bio-)chemical and physical factors in a three-dimensional (3D) environment. For that purpose new techniques for systematic screenings of a multitude of stimuli with respect to their ability to impact HSCs in 3D are developed.

EFFICIENT PARALLEL GRAPH PARTITIONING WITH FORCE-DIRECTED GRAPH LAYOUTS

Jun.-Prof. Dr. Henning Meyerhenke & Dr. Martin Nöllenburg (YIN-Science Award)

Graphs are abstract data structures used in many disciplines to model relations (edges) between entities (nodes). One of the many applications arises in parallel numerical simulations for creating and testing machines or validating material properties. To map the graph onto the central processing unit (CPU) cores of the parallel system efficiently, graph partitioning (GP) is used. For GP, one needs to partition the node set into as many equally-sized blocks as there are CPU cores while minimizing the communication between cores at block boundaries in the numerical simulation. In our project funded by the YIN-Grant, we investigated the potential of partitioning large graphs by first embedding them into the Euclidean plane and then using a fast geometric partitioning algorithm to obtain a set of nearly equally sized and well separated blocks. Our student assistant implemented the proposed approach based on a previous publication by US colleagues whose implementation is not publicly available. His implementation allows us to reproduce the published results in terms of quality and assess the advantages and disadvantages of this method, which is very important for comparative evaluations. We have completed the project and use its results in an ongoing project for speeding up the embedding we mentioned above.

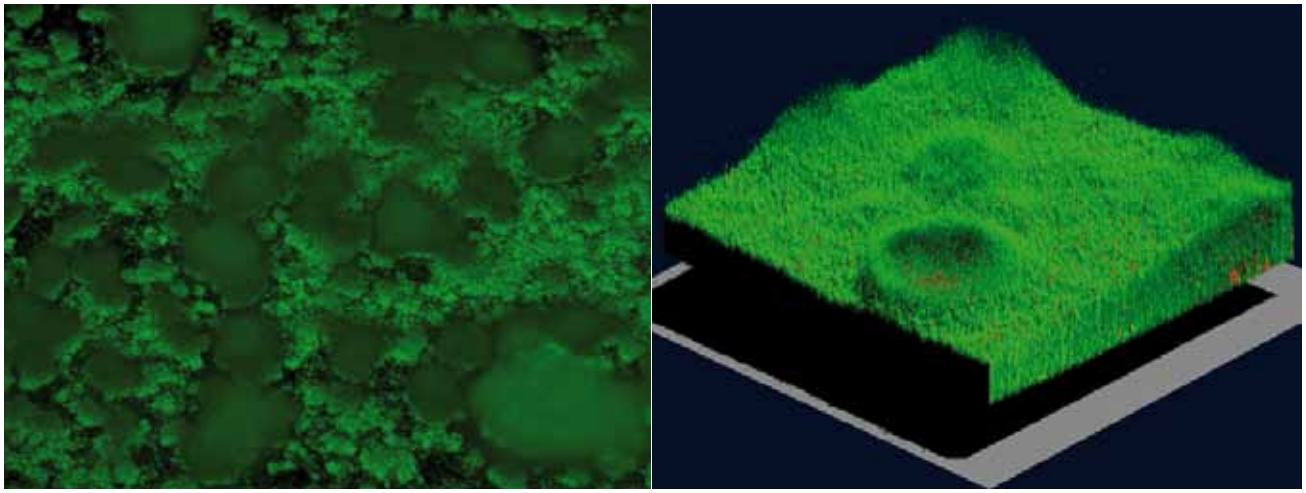


Two-dimensional mesh of an airflow simulation around an airplane wing (shown in cross section). The mesh is partitioned into 12 parts as indicated by the different colors.

BIOLOGICAL COMMUNITIES AND INTERACTIONS AT TECHNICAL SURFACES

Dr. Cornelia Lee-Thedieck & Dr. Jörg Overhage (YIN-Science Award)

Biofilm formation is the crucial factor in many chronic bacterial infections including implant-associated osteomyelitis, a persistent bacterial infection of the bone that occurs in many implant patients. Despite the increasing incidence of osteomyelitis in the aging western societies, surprisingly little is known about how bacteria behave in the three-dimensional environment of bone during osteomyelitis and how the mutual interaction between bacteria, bone cells and the hematopoietic system occur. One of the reasons for this gap of knowledge is the lack of appropriate in vitro systems. Therefore, the aim of our project is to adopt recently developed bone marrow analogs to in vitro osteomyelitis models. With the help of these models, we want to gain a fundamental understanding of the processes occurring during osteomyelitis with special emphasis on the interactions between bacteria, bone, implant material and the hematopoietic system.



Bacteria on surfaces – biofilms

TOUCHLESS INTERACTION WITH INFORMATION SYSTEMS IN THE OPERATION ROOM

Dr. Stefanie Speidel & Dr. Sebastian Stüker (YIN-Science Award)

A key aspect in the operating room (OR) is the interaction with devices and applications that allow access to information such as preoperative planning data or patient data. Since the interaction has special requirements regarding sterility and integration into the surgical workflow, speech control is a perfect tool for realizing a touchless and intuitive interface within the OR. In this project, a navigation system for laparoscopic surgery was enhanced with speech recognition for interaction. An OR capable microphone was integrated into a test setup so that the surgeon can now request assistance functions via speech, e.g., the visualization of target structures like tumors. Both research groups integrated their expertise in the field of computer-assisted surgery and speech recognition. The resulting successful integration of the technology from both groups is now a good foundation for further projects that advance the state-of-the-art in this field.

CAPS: CAPILLARY SUSPENSIONS – A NOVEL ROUTE FOR VERSATILE, COST EFFICIENT AND ENVIRONMENTALLY FRIENDLY MATERIAL DESIGN

A wide variety of materials is processed or delivered as suspensions: This includes coatings and adhesives, emerging materials for nanotechnology products as well as everyday food products. Dr. Erin Koos from the Institute for Mechanical Process Engineering and mechanics at KIT has received an ERC Starting Grant to use the recently developed capillary suspensions to revolutionize product formulations and material design. When a small amount (usually less than 1%) of a second immiscible liquid is added to the continuous phase of a suspension, the rheological properties of the mixture are dramatically altered from a fluid-like to a gel-like state or from a weak to a strong gel and the strength can be tuned in a wide range covering orders of magnitude. This project will investigate the influence of factors determining capillary suspension formation, the strength of these admixtures as a function of these aspects and how capillary suspensions depend on external forces. These admixtures will be investigated on the micro- and macroscopic scale using a variety of techniques. Such a fundamental understanding of the network structure and formation in capillary suspensions will allow for the design of sophisticated new materials. This project will also investigate the suitability of capillary suspensions for: sintered materials with unprecedented porosity; plastic films with a minimum amount of plasticizer; water-based paints and ink formulations; ultra low fat foods and spreads; and stable suspensions of inorganic particles for printed electronics.

Dr. Erin Koos
Institute for Mechanical Process Engineering and Mechanics

DROPLET MICROARRAYS: ULTRA HIGH-THROUGHPUT SCREENING OF CELLS IN 3D MICROENVIRONMENTS

Which factors make a stem cell turn into a bone cell or a blood cell? What functions do individual genes undertake? In basic biological research or for the development of new drugs, often thousands to a million genetic or chemical tests on cells are necessary. Dr. Pavel Levkin from the Institute of Toxicology and Genetics at KIT has received an ERC Starting Grant to develop a new platform that will allow biologists to perform high-throughput cell screenings in a much faster and cheaper way, which should foster new experiments and discoveries in the field of cell biology. This method uses special microstructures that combine superhydrophobic and superhydrophilic properties on the same surface. Patterned like a finely checkered quilt, hydrophilic microspots on which droplets form spontaneously are separated by narrow hydrophobic regions that function as a barrier between the droplets. Up to 25,000 isolated droplets can be aligned on a microarray the size of a glass slide. The droplet size and shape can be easily controlled. Additionally, the scientists will develop a method that encapsulates cells in hydrogel micropads instead of droplets. While cells in standardized methods for cultivation settle on a flat substrate, in the hydrogel micropads the cells are grown in three-dimensions. As cells interact very strongly with their surroundings and behave more naturally in a three-dimensional environment, this approach promises more biologically relevant results. The goal of this project is to develop the droplet microarray technology into a new miniaturized platform for performing multiple parallel cell experiments to accelerate the fundamental discoveries as well as identification of new promising drug candidates.

Dr. Pavel Levkin
Institute of Toxicology and Genetics

NEW YIN-MEMBERS 2013/2014

Dr.-Ing. Luise Kärger
Institute of Vehicle System Technology (FAST)
Vector Stiftung YIG
"Green mobility"

Dr. Bijan Khazai
Geophysical Institute (GPI)
Research Group
"Risk and vulnerability working group"

Dr. Erin Koos
Institute for Mechanical Process Engineering and Mechanics (MVM)
ERC Grant
"Capillary suspensions"

Dr. Felix Löffler
Institute of Microstructure Technology (IMT)
Carl-Zeiss Grant
"Microarray technology and antibody profiling"

Dr.-Ing. Steven Peters
Institute of Production Science (WBK)
Industry Fellow of Daimler AG; KIT-Nachwuchsgruppenleiter; Postdoctoral Fellowship of Baden-Württemberg Stiftung
"Production technology management"

Dr. Frank G. Schröder
Institute for Nuclear Physics (IKP)
Helmholtz-Russia Joint Research Group
"Radio measurements of cosmic rays near Lake Baikal"

Dr. Julia Syurik
Institute of Microstructure Technology (IMT)
Helmholtz-Post Doc Grant
"Y-shaped CNT-based nanoelectronics"

Dr.-Ing. Frederik Zanger
Institute of Production Science (WBK)
Research Group
"Manufacturing and materials technology"

NEW ALUMNI 2013/2014

Name	YIN-Membership	Current position
Prof. Dr.-Ing. Hartmut Hetzler	2008–2013	Professor at the Institute of Mechanics, University of Kassel
Prof. Dr. Philipp Blum	2010–2014	Professor at the Institute for Applied Geosciences (AGW), KIT
Prof. Dr.-Ing. Samuel Kounev	2011–2014	Professor at the Department of Computer Science, University of Würzburg
Dr. rer. nat. Ferdinand Schmidt	2008–2014	Head of Research Group "Energy and Building Technology" at the Institute of Fluid Machinery (FSM), KIT
Dr. Katja Träumner	2011–2014	Algorithm developer (R&D), NDT Global

contact
Karlsruher Institut für Technologie (KIT)
Young Investigator Network (YIN)
YIN-office

Karina Scholpp
+49 721 608-28398
karina.scholpp@kit.edu

Editorial Office
Dr. Lars Bauer
Dr. Erin Koos
Karina Scholpp

Proof of pictures
p. 1 Markus Breig, arranged by Martin Nöllenburg
additional picture: Fotolia.com/teracreonte
pp. 2–3 and 10–11 portraits Markus Breig
p. 6 Michael Hamann
p. 7 Andreas Drollinger
p. 8 Henning Meyerhenke and Stefan Schamberger
p. 9 Jörg Overhage
pp. 10–11 private

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Editor
Karlsruher Institut für Technologie (KIT)
Young Investigator Network
Hermann-von-Helmholtz-Platz 1,
76344 Eggenstein-Leopoldshafen

Tel. +49 721 608-28398
Fax +49 721 608-22243
info@yin.kit.edu
www.yin.kit.edu