



**KNRTU**

KAZAN NATIONAL RESEARCH TECHNOLOGICAL  
UNIVERSITY

INTRODUCTION & COLLABORATION  
OPPORTUNITIES

# TOP CHEMICAL ENGINEERING CENTER IN RUSSIA

## Sustainable Excellence & Integrity:



**One of 9 basic university  
partners of Gazprom in Russia**

## Investments and R&D from scratch to turnkey solutions

- Turnkey Industrial Projects in Chemical Engineering
- Localization of Technologies for Russian Market
- Advanced R&D Infrastructure
- Full-Cycle Professional Training of Engineers



# TOP RUSSIAN ACADEMIC CENTER IN CHEMICAL ENGINEERING

- Over 26,000 students
- Over 1000 post-graduate students
- Over 80 postdocs
- Over 300 Full Professors
- Over 50 postgraduate programs
- Over 160 Specialist, Bachelor and Master Degree programs

1890

INTEGRATED COLLEGE  
OF ENGINEERING AND  
CHEMICAL SCIENCES

1935

KAZAN STATE CHEMICAL  
TECHNOLOGY INSTITUTE

1992

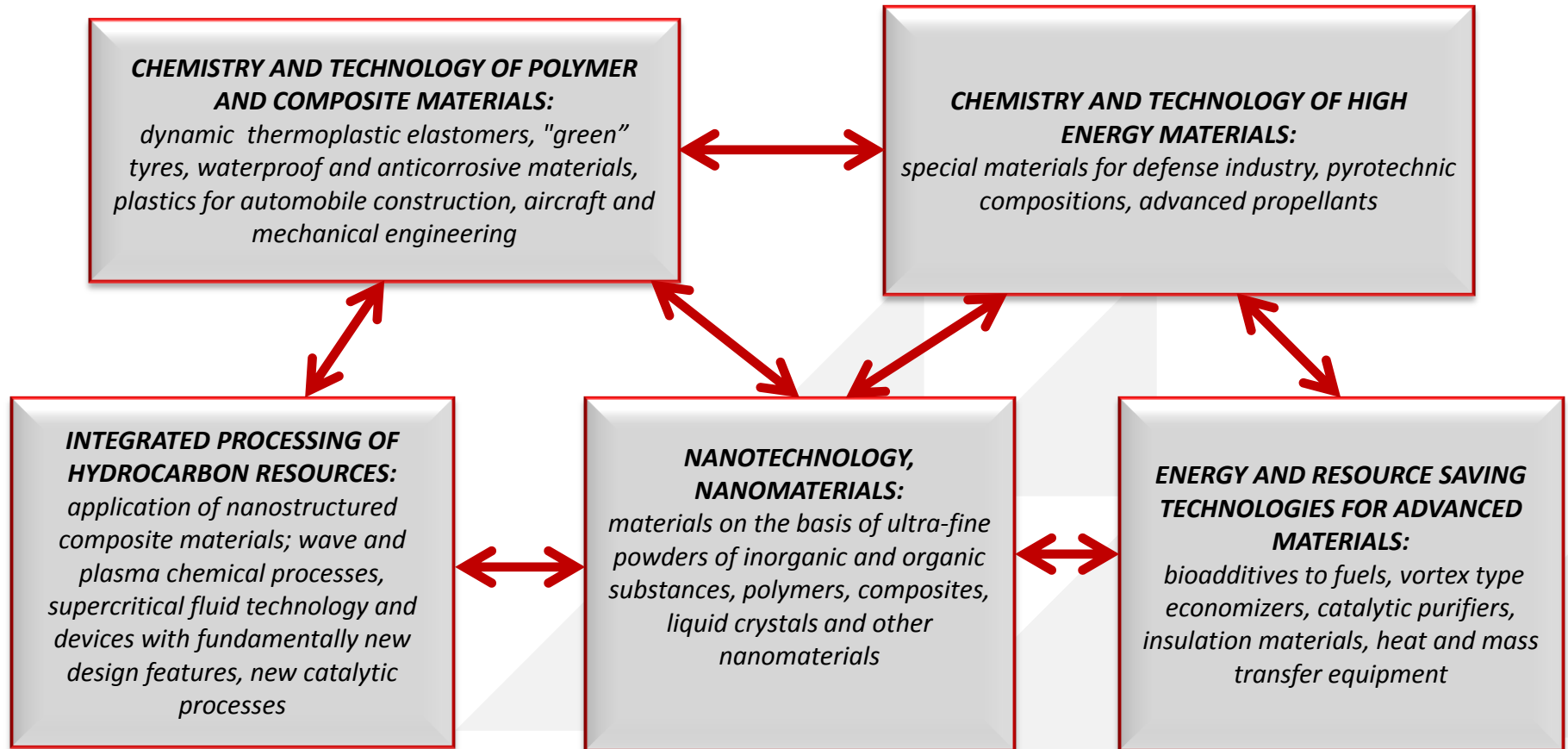
KAZAN STATE  
TECHNOLOGICAL  
UNIVERSITY

2010

KAZAN NATIONAL RESEARCH  
TECHNOLOGICAL  
UNIVERSITY



# DEVELOPMENT PRIORITIES IN RESEARCH



# INTERNATIONAL PARTNERS MAP





# KNRTU R&D AND ACADEMIC INFRASTRUCTURE

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- Institute of **Polymers**
- Institute of **Chemical Engineering** and Technology
- Institute of **Mechanical Engineering** for Chemical and Petrochemical Industry
- Institute of **Innovation Management**
- Institute of Petroleum, Chemistry and **Nanotechnology**
- Institute of Food Engineering and **Biotechnology**
- Institute of Textile Industry, **Fashion and Design**
- Institute of Automated Control Systems and **IT**



# SELECTED **ACADEMIC PROGRAMS** FOR INTERNATIONAL PROJECTS

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- Complex Systems of **Petrochemical Engineering**
- Theoretical Foundations of **Advanced Chemical Technologies**
- Gas Chemical Technologies for Production of Raw Materials for **Polymers**
- **Polymer Science and Technology**
- **Nanostructured** Natural and Artificial Materials
- Chemical and Physical Modification of **High Molecular Weight Compounds**
- Technology of Nanomodified Inorganic **Composite Materials** and Coatings



# IMPLEMENTED INFRASTRUCTURAL PROJECTS



**Steel Cord Truck Tire  
Production Plant**

1,2 million pieces/year  
Neftegazengineering



**Oil Extraction  
Plant**

1,200 tons/day  
Kazan Oil Extraction Plant



**Polyethylene  
Production**

230,000 tpa  
Nizhnekamskneftekhim



**High Octane  
Petrol Component**

175,000 tpa  
OJSC "TAIF-NK"



# COLLABORATION WITH **GERMANY**

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- University of Applied Sciences, Merseburg
- Universität Münster
- Wildau Technical University of Applied Sciences
- The University of Paderborn
- University of Kassel, East West Science Center
- Technische Universität Bergakademie Freiberg
- Chemnitz University of Technology
- KRAUSS-MAFFEL and BERSTORFF
- Mageba Textilmaschinen GmbH&Co.KG
- Universität Karlsruhe (TH)



Michael Droescher is  
KNRTU Honorary Doctor



# COLLABORATION WITH GERMANY



## UNIVERSITY OF APPLIED SCIENCES, MERSEBURG

- Joint B.Sc Degree Program
- Student Summer Program, 2013
- KNRTU students at B.Sc. Program at the University of Applied Sciences, Merseburg
- Proposed Joint program on Polymer Composites Language program for prospective students of Merseburg University



# COLLABORATION WITH GERMANY



## UNIVERSITÄT MÜNSTER

- Joint training of students in 2014. A short-term exchange program was arranged for KNRTU students. They took part in the International Summer School in entrepreneurship
- Collaboration area: Innovative Entrepreneurship
- Contact person in KNRTU: prof. Dilbar Sultanova, [econsultan@mail.ru](mailto:econsultan@mail.ru)



# COLLABORATION WITH GERMANY

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## UNIVERSITÄT KARLSRUHE (TH)

- Joint research in Biotechnology (KNRTU contact: – Prof. Sirotkin, [asirotkin@mail333.com](mailto:asirotkin@mail333.com))
- Student internships in 2006-2015
- Karlsruhe professors visited KNRTU with lectures
- Papers published in *KA-Korrespondenz Abwasser, Abfall* and *Water: Chemistry and Ecology*
- Research in the framework of DAAD grant resulted in 3 PhD dissertations
- Joint conference in KNRTU in 2015 funded by DAAD



Universität  
Karlsruhe (TH)





# COLLABORATION WITH GERMANY



## UNIVERSITY OF PADERBORN

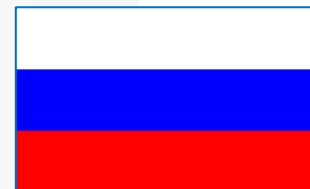


- Agreement on short-term student training at KNRTU
- Lectures in KNRTU for students and faculty in 2014
- Direct faculty contacts:
  - ✓ Contact in Germany: Prof. Claudia Schmidt
  - ✓ Contact at KNRTU: Prof. Galyametdinov, yugal2002@mail.ru

## OTTO VON GUERICKE UNIVERSITY MAGDEBURG



- Research in supercritical fluids
- Internship of KNRTU PhD students
- Contact at KNRTU: Prof. F.Gumerov, gum@kstu.ru



# COLLABORATION WITH GERMANY



## TECHNISCHE UNIVERSITÄT BERLIN

- 1-3-months internships of KNRTU PhD students
- Collaboration area: Energy Saving Technologies for Biodegradable Polymers
- 6 papers in peer-reviewed journals
- Contact at KNRTU: Prof. Polivanov, [pimp@kstu.ru](mailto:pimp@kstu.ru)



## EVONIK

### Prospective Research areas:

- Polymers of medical application
- Nanocomposite materials
- Enhanced oil recovery
- New polyamides: synthesis and application



**EVONIK**  
INDUSTRIES



# COLLABORATION WITH GERMANY



## DARMSTADT TECHNICAL UNIVERSITY

- Collaboration area: Physical Chemistry of Liquid Crystals
- Collaboration area: Energy Saving Technologies for Biodegradable Polymers
- Examples of joint papers:
  - Yu. G. Galyametdinov etc. Mesomorphic behaviour and luminescent properties of mesogenic  $\beta$ -diketonate lanthanide adducts with 5,5'-di(heptadecyl)-2,2'-bipyridine, *Liquid Crystals*, 2013, V. 40, I. 7, pp 857-863
  - W. Haase, Yu. G. Galyametdinov et al. / Tris( $\beta$ -diketonates) lanthanum nematic adducts // *Liquid Crystals*, 2010, V. 37, №3, c. 285 — 291
- Contact at KNRTU: Prof. Galyametdinov, [yugal2002@mail.ru](mailto:yugal2002@mail.ru)



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT



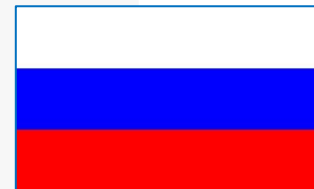
# COLLABORATION WITH GERMANY

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## UNIVERSITY OF POTSDAM

- 3-months training of KNRTU PhD students
- Participation of faculty in KNRTU international conferences
- Joint research and publications:
  - Dielectric properties of electrets based on epoxy polymers;
  - Electret and piezoeffects in epoxy polymers;
  - Electretting effect on wetting of polystyrene films
- Contact at KNRTU: Prof. Galikhanov, [mgalikhanov@yandex.ru](mailto:mgalikhanov@yandex.ru)





# COLLABORATION WITH GERMANY

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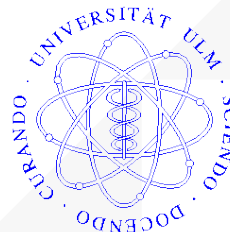


## LUDWIGSHAFEN UNIVERSITY OF APPLIED SCIENCES



- Research in social field
- Contact at KNRTU: Prof. Zinurova, [rushazi@rambler.ru](mailto:rushazi@rambler.ru)

## THE UNIVERSITY OF ULM

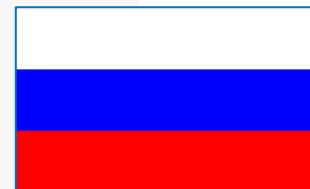


- Joint research in quantum electrochemistry
- Contact at KNRTU: Prof. Nazmutdinov, [nazmutdi@kstu.ru](mailto:nazmutdi@kstu.ru)

## THE UNIVERSITY DUISBURG-ESSEN



- Joint research in molecular dynamics
- Contact at KNRTU: Prof. Nazmutdinov, [nazmutdi@kstu.ru](mailto:nazmutdi@kstu.ru)



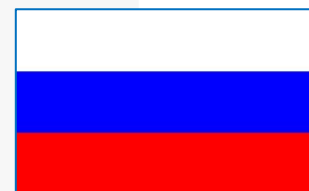
# COLLABORATION WITH GERMANY

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## MAX PLANCK SOCIETY

- **Planck Institute for Polymer Research**, Mainz: potential research in polymer modification, liquid crystalline systems, polymer composite materials (Contacts at KNRTU: Prof. Galyametdinov, yugal2002@mail.ru)
- **Max Planck Institute of Colloids and Interfaces**, Potsdam-Golm: joint research in nanotechnology and nanomaterials, capsulation methods and capsulated functional additives (Contact at KNRTU: Prof. Svetlakov, svetlakov@kstu.ru);
- **Max Planck Institute for Mathematics in the Sciences**, Leipzig: Solvation in Complex Liquids (Contact at KNRTU: Prof. Nazmutdinov, nazmutdi@kstu.ru)



# COLLABORATION WITH GERMANY

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## DAAD - GERMAN ACADEMIC EXCHANGE SERVICE

### Academic programs:

- Joint Scholarship Program of the Ministry of Education and Science of the Republic of Tatarstan and German Academic Exchange Service: internship for PhD students, scientists and faculty of Tatarstan universities;
- Master's Degree Scholarship Program for the graduates of Tatarstan universities (education in Germany)
- Annual meetings of KNRTU students with Thilo Zinniker, the DAAD representative in Kazan

# DAAD

Deutscher Akademischer Austausch Dienst  
Servicio Alemán de Intercambio Académico



# COLLABORATION WITH **GERMANY: INDUSTRY**

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## **ENTEX (BOCHUM)**

Joint Research and Education Center: designing of equipment for production, processing, and compounding of polymer and composite materials

## **BASF**

Benefit Project by BASF and Graco: Polymer Materials Foaming Section. Contact at KNRTU: Prof. Zenitova, [zenit@kstu.ru](mailto:zenit@kstu.ru)

## **MAGEBA**

Joint Research and Education Center with MAGEBA Textilmaschinen GmbH&Co.KG for textile research

## **KRAUSSMAFFEI BERSTORFF GMBH**

Production line is equipped by KraussMaffei Berstorff GmbH





## ACADEMIC COOPERATION

- Implementation of joint **short-term programs** such as **summer schools** in Russia and Germany
- Development of **dual degree programs** for studying Russian students in **Germany**
- **Training** of KNRTU faculty in Germany
- **Adaptation of curriculum** of KNRTU academic programs for joint projects with German partners
- Selected academic **programs** for **international projects**



# COLLABORATION PROPOSALS

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## RESEARCH COOPERATION

- **Invitation of German professors** to KNRTU for scientific lectures
- **Joint research** projects in **chemical engineering** (polymers, nanotechnologies, biotechnologies, petrochemistry)
- **Invitation of German scientists** to international conferences and workshops hosted by KNRTU
- **Joint publications** in peer-reviewed journals
- Short-term and long-term research of KNRTU young scientists in Germany



# COLLABORATION PROPOSALS

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## ADJUSTMENT OF GERMAN TECHNOLOGIES TO THE RUSSIAN MARKET

- Complex Design Projects for Chemical and Polymer Industries
- Development of Engineering Infrastructure for the Industrial Projects
- Industrial Safety Expertise
- Turnkey Projects for Industrial Companies



# COLLABORATION PROPOSALS

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## GRANT APPLICATIONS

- **DAAD** scholarships for Russian and German scientists
- **Local Algarysh grants** providing full funding for MSc and PhD studies of Kazan students in Germany
- **Joint DAAD-Algarysh** grants for young scientists (3 months research), dual degree programs (MSc), project groups (3 months research) and invitation of German scientists to Kazan (4 months)
- **“Megagrants”**: grant for creating a laboratory in KNRTU headed by a top foreign scientist
- Joint grants by Deutsche Forschungsgemeinschaft and **Russian Foundation for Humanities** for humanitarian research (such as international relations)

Applicati

Grants







DANKE SCHÖN!

СПАСИБО!