

# News Release



## Speeding up and focusing research activities

- **BASF hones success factors in order to grow profitably with innovations and technological advances**
- **Approximately 10,000 employees and around €2 billion in R&D expenditures drive innovation strength**
- **Research Press Conference presents current projects from the three global research platforms**

Ludwigshafen, Germany – June 8, 2016 – The innovation-driven world of chemical and technology companies is characterized by a constant process of change. To maintain its successful track record in this environment, BASF is further speeding up and focusing its research and development activities, said Dr. Martin Bruder Müller, Vice Chairman of the Board of Executive Directors and Chief Technology Officer of BASF, at the Research Press Conference held today in Ludwigshafen. Even though BASF's research is already very successful with an output of about €10 billion sales from innovative products, the company needs to adapt its established approaches to changing conditions, said Bruder Müller.

“Our R&D success factors are creativity, efficiency and integration. Fostering creativity and creating the conditions necessary to achieve it are among the company's most important tasks,” he added. Creative and efficient work is also supported by integration, Bruder Müller explained. “To do this, we need to intelligently combine the competencies of our global Research and Development Verbund while also taking advantage of our external networks.” Every R&D employee needs to demonstrate focus and discipline combined with

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flexibility and openness. “We gain speed by constantly challenging ourselves to flexibly react to changes and to tackle the right topics in a focused way,” Bruder Müller said.

### **Global Know-How Verbund delivers strong figures**

Innovations based on chemistry require market-oriented research and development that focuses strongly on the needs of customers. In 2015, BASF’s research pipeline encompassed around 3,000 projects and spending on research and development rose to €1,953 million (2014: €1,884 million). The operating divisions were responsible for 79 percent of these R&D expenditures. The remaining 21 percent was allocated to cross-divisional corporate research focusing on long-term topics of strategic importance to the BASF Group. In order to bring promising ideas to market even faster, BASF regularly assesses its research projects using a multistep process and focuses its topics accordingly.

The foundation of BASF’s innovation strength is its global team of highly qualified employees from various disciplines: In 2015, around 10,000 employees were working in Research and Development worldwide. The central research areas Process Research & Chemical Engineering, Advanced Materials & Systems Research and Bioscience Research serve as BASF’s three global research platforms, headquartered in the company’s main regions – Europe, Asia Pacific and North America. Together with the development units of the divisions, they form the core of BASF’s Know-How Verbund. With around 4,900 employees working in Research and Development, Ludwigshafen (including Limburgerhof) remains the largest site in BASF’s Research Verbund. This was reinforced by the investment in a new research building which creates modern workspaces and ideal cooperation conditions for around 200 employees in the platform Advanced Materials & Systems Research.

At the Research Press Conference, BASF experts presented current projects from each of its three global research platforms.

**Catalysts: added value for exhaust gas cleaning and refineries**

For the research platform Process Research & Chemical Engineering, the focus was on specialty zeolites, such as BASF's copper chabazite, which play a vital role in emission-control catalysts for diesel engines because they are especially efficient at removing nitrogen oxides from exhaust gas. Demand for modern catalyst systems for cars is growing steadily thanks to increasingly stringent emission regulations. To meet this demand, BASF researchers are continually working on developing the next generation of specialty zeolites. Using sophisticated raw materials and processes, they can adjust the size of the pores in order to make particles that are more consistent. BASF has also developed a boron-based catalyst technology (BoroCat™) that enables refineries to increase yields of valuable products like gasoline, diesel and other fuels from crude oil. The nickel contained in crude oil presents a particular challenge to further processing, as it significantly increases the generation of undesirable by-products like petroleum coke and hydrogen. Containing an optimized pore structure, the new BoroCat Fluid Catalytic Cracking (FCC) catalyst intercepts nickel in processing, thus preventing undesirable chemical reactions.

**White biotechnology: thermostable enzyme for animal nutrition**

For the research platform Bioscience Research, the focus was on a new, improved phytase (Natuphos®E) for animal nutrition developed by BASF researchers. Phytase is an enzyme that helps animals to better digest the phosphate contained in plants. But many enzymes are heat-sensitive and can be destroyed by the high temperatures in the pelleting process used to make animal feed, thus rendering the enzymes ineffective. To develop an effective, thermostable phytase, BASF researchers examined numerous different phytases that exist in bacteria and then developed the best possible hybrid from these using biotechnological methods. This was then further improved and an appropriate production strain based on the fungus *Aspergillus niger* was developed for the fermentation (biotechnological production) of the enzyme. The new phytase has already been

launched in some countries in Asia and South America as well as in the United States. Approval in Europe is expected in 2016.

### **Plastics: successfully minimizing noise and vibrations**

For the research platform Advanced Materials & Systems Research, the focus was on the topic “Noise, Vibration and Harshness.” BASF experts are investigating the possibilities of minimizing unwanted noise and vibrations by using material and component design. This is becoming increasingly important since both background noise levels and vibrations continue to grow as our home and work environments become more automated. At the same time, the noises are changing. In electromobility, for example, engine noise is quieter but other annoying frequencies become more prominent and need to be reduced. Another example is household appliances. With increasing urbanization, more and more people are living in confined spaces. Households not only have more electrical appliances, the equipment is getting more powerful. The resulting noise and vibration need to be minimized. An interdisciplinary BASF team comprising chemists, physicists and engineers is improving various polymer solutions that can be used to optimize frequencies in the range that can be felt and heard: from 1 to 20,000 Hertz. Depending on the frequency range and the requirements, the team is able to change the design of components and/or the molecular or foam structure of the materials used (polyamides, polyurethanes, melamine resin foams) with computer simulations.

### **About BASF**

At BASF, we create chemistry for a sustainable future. We combine economic success with environmental protection and social responsibility. The approximately 112,000 employees in the BASF Group work on contributing to the success of our customers in nearly all sectors and almost every country in the world. Our portfolio is organized into five segments: Chemicals, Performance Products, Functional Materials & Solutions, Agricultural Solutions and Oil & Gas. BASF generated sales of more than €70 billion in 2015. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). More information at: [www.basf.com](http://www.basf.com).