

150 years



News Release

BASF and top universities jointly develop new process improving the bioavailability of active ingredients

■ **Supersonic spray-drying process yields stable and soluble amorphous nanoparticles**

Ludwigshafen, Germany – September 14, 2015 – In collaboration with researchers from the renowned universities Harvard, EPFL (Switzerland), and Yale, BASF scientists developed a new process that makes amorphous nanoparticles with increased solubility. This improves the efficient uptake of drugs, for example, in the human body. Without such processing drug molecules would arrange in the form of crystals, which are difficult to dissolve. Due to poor solubility in many cases the development of innovative drugs has been discontinued.

The international research team has developed a microfluidic nebulizer to create very small nanoparticles from drugs that are first dissolved in a solvent and then exposed to a stream of air with the speed of 600 meters per second – almost twice the speed of sound. “The high-speed air flow enables fast evaporation of the solvent, which leaves no time for the molecules to arrange themselves in the form of a crystal. Molecules, therefore, arrange themselves randomly in an amorphous structure and are ten times easier to dissolve,” explained Dr. Christian Holtze, research manager at BASF.

The process can be applied to both organic and inorganic substances making it attractive for numerous potential applications. The increased solubility means higher uptake of active ingredients.

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This is particularly valuable to pharmacology, the food industry and crop protection.

“This system offers exceptionally good control over the composition, structure and the size of particles, enabling the formation of new materials,” said Esther Amstad, professor at EPFL and formerly researcher at Harvard.

Marc Schroeder, BASF researcher and Head of the North American Center for Research on Advanced Materials is convinced: “This milestone finding is a result of strong collaborative efforts between industry and academic institutions to work closely on scientific challenges. The interdisciplinary approach has helped find a scientific explanation to an unexpected experimental finding, thus enabling broader potential applications of this technology.”

About BASF

At BASF, we create chemistry – and have been doing so for 150 years. Our portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. As the world's leading chemical company, we combine economic success with environmental protection and social responsibility. Through science and innovation, we enable our customers in nearly every industry to meet the current and future needs of society. Our products and solutions contribute to conserving resources, ensuring nutrition and improving quality of life. We have summed up this contribution in our corporate purpose: We create chemistry for a sustainable future. BASF had sales of over €74 billion in 2014 and around 113,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information on BASF is available on the Internet at www.basf.com.