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## News Release

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Industrial research at the highest scientific level:

### **Otto Bayer Medals for Excellence in Research**

- Three Bayer research teams have been honored for excellent innovations
- Budget for research and development of EUR 3 billion in 2012

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**Leverkusen/Cologne, October 23, 2012** – Scientists of the Bayer Group have been awarded the Otto Bayer Medal for their excellent achievements in three research projects. This award honors successful contributions to research for new products or applications as well as innovative technologies. Dr. Marijn Dekkers, chairman of the Board of Management of Bayer AG, and Professor Wolfgang Plischke, member of the Board of Management of Bayer AG, responsible for Technology, Innovation and Sustainability, presented the awards to the prizewinners at the Bayer Science Day event, attended by about 900 researchers on October 23, 2012 in the Gürzenich building in Cologne.

"The quality of our research and the expertise of our scientists are undoubtedly among our key competitive advantages in the global marketplace," said Dekkers. The awarding of the Otto Bayer Medal documents the paramount importance that the company attaches to research and development. Bayer plans to spend around EUR 3 billion on research and development in 2012. "That is a considerable sum of money, but we believe it is a very sound investment. And I'm proud to say that our spending on research has more than paid off in the past and sustained our mission – Bayer: Science For A Better Life," explained Dekkers.

Research projects from Bayer HealthCare, Bayer CropScience, Bayer MaterialScience and Bayer Technology Services were honored. "The awarding of the Otto Bayer Medal is far more than a symbolic act. It is part of our company and research culture, which supports creativity and innovations, promotes performance and rewards success," said Board member Plischke.

The projects in which the 2012 winners of the Otto Bayer Medal are involved reflect the wide spectrum of research activities at Bayer. They range from innovative technologies for family planning through a resource-saving process for polymer production to a new herbicide for crops.

### **Bayer HealthCare: Contraception with a hormone-releasing intrauterine system – a successful technology platform**

Bayer has developed an intrauterine system for continuous hormonal contraception over a period of up to five years. Polymer-based drug delivery systems and reliable, easy-to-use application systems have created a successful technology platform to ensure the company's market leadership. The polymer-based technology for releasing the active ingredient utilizes Bayer's unique know-how in developing long-acting polymer-based products such as intrauterine systems (IUS). The technology can also be used for vaginal rings and subcutaneous implants.

The interdisciplinary team comprising Jyrki Pihlaja, Dr. Manja Ahola, Tuula Valo and Pekka Lankinen from Bayer's pharmaceutical research unit in Finland has made essential contributions to improving the IUS platform – a unique combination of technologies and know-how for developing, manufacturing and testing the drug delivery system. Successful product development requires a high level of expertise in all the disciplines that play a role in this drug delivery system – polymer science, production technologies, specific characterization methods and application system design. That's why Bayer leads the way in this field, and it is extending its lead with this new development that benefits patients.

### **Bayer CropScience: Indaziflam – a herbicide with a novel mode of action**

Given the growing world population and the associated increased demand for food, new and sustainable solutions are needed to safeguard harvests. There has long been a need for advanced residual herbicides for the efficient cultivation of perennial crops such as fruits (including citrus fruits), vines, nuts, olives and also sugar cane. The breakthrough was achieved by herbicide research scientists in Frankfurt.

Dr. Hansjörg Dietrich, Dr. Mark Ford, Dr. Klemens Minn, Dr. Erwin Hacker, Dr. Thomas Auler and Dr. Michael Kilian have developed Indaziflam, a herbicide with a novel mode of action that intervenes in cellulose biosynthesis. Due to its complex chemical structure, the development of this herbicide required an extremely high level of technical innovation to enable the active ingredient to be manufactured cost-efficiently. Indaziflam is effective

against a very wide range of weeds and offers excellent long-term results with very small doses. Instead of multiple treatments to control weeds, farmers now need only one single application of herbicide. These unique properties make Indaziflam a ground-breaking active ingredient in the global herbicide market.

Products based on Indaziflam can be used as a new base herbicide for the agricultural target crops. Other areas of application for professional users include the economically attractive landscaping segment, for example maintaining the grass on golf courses, in sports arenas and in public parks. Launched in 2010, Indaziflam conquered new markets in which Bayer CropScience previously had little market share.

### **Bayer MaterialScience: New process technologies for sustainability and resource conservation**

In the past, polycarbonate (Makrolon) from Bayer was made using a continuous melt condensation process, but thanks to progress in catalysis and the availability of innovative high-viscosity technologies, the process has been improved considerably. The new manufacturing method is based on a multi-stage, continuous and solvent-free polycondensation sequence using customized evaporation plants, high-purity raw materials and an optimized plant design that includes side-stream recycling and cleaning. What's more, no solvents are needed for polycarbonate production. The specific energy consumption of the melt process is, on average, 20 percent lower than with the conventional phase boundary method and the specific water consumption a full 60 percent lower. This results in a robust process that generates significant cost savings and benefits the environment.

The interdisciplinary team of chemists and engineers from Bayer MaterialScience and Bayer Technology Services (BTS) – comprising Johan Vanden Eynde, Marc Buts, Dr. Yun Chen and Dr. Rolf Wehrmann – built on earlier successes by colleagues from the Polycarbonates Business Unit and BTS to achieve long-term optimization of the melt polycarbonate technology and establish the process in Caojing (China). The site there now operates two 100 metric kiloton melt process lines. To meet the growing market, plans to increase this production capacity are already under way. The economic benefits of the melt process have led to annual cost savings of around EUR 5 million at the Caojing site.

The Otto Bayer Medal has been awarded regularly to outstanding researchers in the company since 1984 in memory of the inventor of polyurethane chemistry and former research head of Bayer AG Professor Otto Bayer, who died in 1982 and was not related to the founder of Bayer.

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**Forward-Looking Statements**

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