

News Release

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Plastics with 3D Effect: Merck KGaA, Darmstadt, Germany and PolyOne Agree to Collaborate

- **Long-term strategic partnership aimed at innovative plastics technologies with pearlescent pigments**
- **The 3D depth effect created in a single step during the injection molding process**

Darmstadt, Germany, October 12, 2016 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, will refine and market its innovative 3D plastics technology together with PolyOne (with headquarter in Cleveland/Ohio, United States) in a strategic collaboration. PolyOne is a global leader in polymer materials, colorants and services. Together, the two companies want to develop this pioneering in-mold 3D (IM3D) technology and establish it in end-use markets including packaging and consumer electronics. A patent application has been filed for IM3D for plastics applications. Merck KGaA, Darmstadt, Germany, already has had success with similar 3D technology for printing on paper. "IM3D is just the beginning of our strategic collaboration with PolyOne. Our objective in the coming years is to jointly launch additional innovative plastics technologies with pearlescent pigments", says Michael Heckmeier, Head of the Pigments & Functional Materials business unit at Merck KGaA, Darmstadt, Germany.

Fascinating depth effect, smooth surface

The human eye perceives in the plastic a three-dimensional image that seems to come out of the flat surface, but the plastic itself is completely smooth and planar. Several processing steps were previously necessary to generate this depth effect in the polymer; now the 3D impression is created in just one step during the injection molding process itself using the innovative technology from Merck KGaA,

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Merck KGaA

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Darmstadt, Germany. The striking effect turns packaging components such as caps and closures as well as plastic housings into distinctive eye-catchers.

“With the IM3D technology from Merck KGaA, Darmstadt, Germany, brand manufacturers have an outstanding enhancement technology at their disposal to set their premium products apart from the competition,” adds Christoph Palm, Vice President and General Manager, Color & Additives EMEA & India at PolyOne. “Leading brand owners from the packaging and consumer electronics industries will count among those very interested in this new technology.”

About PolyOne

PolyOne Corporation, with 2015 revenues of \$3.4 billion, is a premier provider of specialized polymer materials, services and solutions. The company is dedicated to serving customers in diverse industries around the globe, by creating value through collaboration, innovation and an unwavering commitment to excellence. Guided by its Core Values, Sustainability Promise and No Surprises PledgeSM, PolyOne is committed to its customers, employees, communities and shareholders through ethical, sustainable and fiscally responsible principles. For more information, visit www.polyone.com.

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About Merck KGaA, Darmstadt, Germany:

Merck KGaA, Darmstadt, Germany, is a leading science and technology company in healthcare, life science and performance materials. Around 50,000 employees work to further develop technologies that improve and enhance life – from biopharmaceutical therapies to treat cancer or multiple sclerosis, cutting-edge systems for scientific research and production, to liquid crystals for smartphones and LCD televisions. In 2015, Merck KGaA, Darmstadt, Germany, generated sales of € 12.85 billion in 66 countries.

Founded in 1668, Merck KGaA, Darmstadt, Germany, is the world's oldest pharmaceutical and chemical company. The founding family remains the majority owner of the publicly listed corporate group. Merck KGaA, Darmstadt, Germany, holds the global rights to the Merck KGaA, Darmstadt, Germany, name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.