

## News Release

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# **New Full Spectrum (FS) Phosphors: Merck KGaA, Darmstadt, Germany, Presents Brand-New Phosphor for Violet Technology at Phosphor Global Summit 2017**

- **Violet technology for LEDs adoption has high potential**
- **isiphor® Full Spectrum (FS) phosphors offer ideal solution for LED packages**
- **Non-reabsorption is the key characteristic**

Darmstadt, Germany, April 6, 2017 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, presented its brand-new isiphor® Full Spectrum (FS) phosphors at the Phosphor Global Summit 2017 in La Jolla, California. Full Spectrum phosphors from Merck KGaA, Darmstadt, Germany, are intended for application in violet chip-based LEDs. This violet LED chip trend enables highest color quality, a sun-like spectrum, and lower efficiency droop at high power conditions. Also, optimum white and skin rendering is achieved. To round off these features, phosphors from Merck KGaA, Darmstadt, Germany, are specifically designed to reproduce the chronological sequence of natural light as people spend more and more time indoors. This allows human-centric lighting and sleep-wake cycles to be maintained even without natural daylight.

These brand new FS phosphors which add onto the existing isiphor® portfolio feature unique characteristics such as non-reabsorption, high conversion efficiency, higher freedom of spectra design and less color point variation to optimize binning yield significantly. In addition, these phosphors help to save energy.

Merck KGaA, Darmstadt, Germany, offers a uniquely wide portfolio of advanced materials for the LED manufacturing value chain. Beyond FS phosphors, isiphor®

Page 1 of 2



## News Release

products include innovative phosphors for vivid colors for general lighting applications as well as reliable phosphors for backlighting applications. As the inventor and market leader with a long history of developing lithographic products for the LED industry, Merck KGaA, Darmstadt, Germany, provides cost-effective, high-performance photoresists for high throughput, better adhesion and increased thermal stability in substrate patterning and chip manufacturing. To cover more steps of the LED value chain, high-purity metalorganic precursors with high batch-to-batch uniformity for improved yield in LED chip manufacturing are part of the portfolio as well. Lastly, Merck KGaA, Darmstadt, Germany, provides novel binder spray materials for the LED industry offering new possibilities for LED packaging, especially in high power applications.

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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 2016, Merck KGaA, Darmstadt, Germany, generated sales of € 15.0 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“ name and brand. The only exceptions are the United States and Canada, where the company operates as EMD Serono, MilliporeSigma and EMD Performance Materials.