

News Release

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Merck KGaA, Darmstadt, Germany, Presents a New Façade Concept Using Advanced OPV and OLED technology in Seoul

- **Bamboo-structured façade concept by architects Nikolaus Hirsch, Michel Müller and artist Rirkrit Tiravanija represents oriental beauty and architectural elegance**
- **Technology enabled by OPV and OLED materials from Merck KGaA, Darmstadt, Germany**
- **Collaboration with long-term industry partners OledWorks, OPVIUS and Kolon**

Darmstadt, Germany, August 31, 2017 – Merck KGaA, Darmstadt, Germany, a leading science and technology company, and its collaboration partners OledWorks, OPVIUS and Kolon today revealed a new textile façade concept combining OPV (organic photovoltaics) and OLED (organic light-emitting diodes) technologies at the first Seoul Biennale of Architecture and Urbanism, an exhibition taking place from September 1 to November 5, 2017 in Seoul, South Korea.

As world-renowned architects, industry leaders, academics, and building scientists come together in Seoul to explore the potential opportunities for architecture and industry, one notable highlight of this project is precisely the multidisciplinary work of architectural and technological processes.

For the Seoul Biennale, German architects Nikolaus Hirsch and Michel Müller, and New York-based Thai artist Rirkrit Tiravanija have developed a new building component of their ongoing “The Land” project. This new façade system will produce energy and emit light using advanced OPV and OLED technology, while seamlessly combining natural beauty with innovative design.

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The eye-catching, shingle-like façade concept is suspended from a series of four-meter long bamboo tubes, which symbolizes oriental elegance, integrity and simplicity. The project is embedded in a sustainable and expanded life cycle that includes diverse sites and durations: from the Seoul Biennale in 2017 to the Luminale exhibition in Frankfurt, Germany, in 2018, and then from the Bau exhibition in Munich, Germany, to Merck KGaA in Darmstadt, Germany, and finally arriving at "The Land" near Chiangmai, Thailand, where the prototype is to be realized in a larger version: a 400 m² building for research and workshops.

The title "Do We Dream Under The Same Sky" by Thai artist Rirkrit Tiravanija embraces a universal and global culture against the current particularisms and promotes a practice of togetherness, sharing, exchange, and experimentation. The site of the installation will be located in a public space in Seoul to ensure it is directly accessible to a large number of visitors and citizens.

David Müller, Global Head of Marketing Photovoltaics at Merck KGaA, Darmstadt, Germany, explained, "From the grand success of OPV Trees at the MILAN Expo 2015 to our joint work with the Harvard Graduate School of Design in 2015, our collaboration with our valuable long-term partners OledWorks, OPVIUS and Kolon continues to yield exciting results." Martina Hueber, Head of Global Operative Marketing OLED at Merck KGaA, Darmstadt, Germany, added that, "Our material solutions show the capability to combine innovative technologies, transform architecture and extend the realm of possibilities".

"We are very pleased that OPV from Kolon and Opvius – the latter also responsible for the system design – has been introduced to the public through this exciting project. It demonstrates the powerful effect of the combination between technology, aesthetic and artistic elements, and we have confirmed the possibility of applying next-generation OPV to building materials. We wish this occasion to help familiarize the public with new organic solar cells and raise awareness for renewable energy, thus contributing to its further distribution and penetration," said Dr. Tae-Hwan Ahn, Senior Vice President of Kolon Industries.

“It is a privilege to work with our strategic partner, Merck KGaA, Darmstadt, Germany, on this exciting project that showcases the superb OLED lighting experience so elegantly,” said David DeJoy, OLEDWorks CEO and co-founder. “The OLED panels blur the line between light engine and light fixture, providing simplicity in integration of light with a myriad of construction materials. This is beautifully revealed in Hirsch, Muller and Tiravanija’s stunning design.”

Our partner architects Nikolaus Hirsch and Michel Müller commented, “The act of building is the result of a collaborative process. Yet, paradoxically, it is still broadly assumed that the complex entity of a building is hidden behind the unifying language conceived by a single author (usually the architect). Do We Dream Under The Same Sky can be seen as a manifesto for the opposite approach: a new façade system of organic photovoltaics and organic light-emitting diodes that tells the story of material development as a true collaboration between engineers, scientists, architects, and artists.”

With the realization of the new façade concept for the Seoul Biennale, Merck KGaA, Darmstadt, Germany, is further pushing the boundaries of materials technology into building and architectural applications, strengthening its position as one of the world’s leading suppliers of performance materials.

About the Seoul Biennale of Architecture and Urbanism 2017

The Seoul Biennale of Architecture and Urbanism 2017 is an experimental platform for an imminent urbanism that goes beyond human-centered function, ownership and consumption to a commons of resources, technologies and production. (<http://seoulbiennale.org>)

About Nikolaus Hirsch/Michel Müller

Nikolaus Hirsch/Michel Müller is a Frankfurt-based office for architecture. Their work has resulted in realized projects such as the Bockenheimer Depot Theater (with William Forsythe), Unitednationsplaza in Berlin (with Anton Vidokle), Cybermohalla Hub in Delhi, and currently the studio residency at The Land (Thailand). They have designed numerous exhibitions such as 'Making Things Public' (ZKM, Karlsruhe, 2005) and 'Indian Highway' (Serpentine Gallery, London, 2008). Their work has also been widely exhibited, including at Manifesta 7 (2008), Louisiana Museum of Modern Art, Copenhagen (2011), Istanbul Design Biennale (2012), Swiss Architecture Museum in Basel (2014), IGNC New Delhi (2014), Art Basel (2015), Chicago Architecture Biennial (2015), and the Garden Triennale in Aarhus (2017).

About OledWorks

OLEDWorks’ mission is to empower inspired customers through pioneering development and manufacture of the world’s best and most affordable OLED lighting devices. Creating world-class, cost-effective solutions requires an entirely new approach that breaks with traditional OLED manufacturing paradigms. With production in Aachen, Germany and in Rochester, New York, OLEDWorks boasts two innovative and complementary manufacturing platforms that deliver affordable OLED solid state lighting panels. OLEDWorks is uniquely positioned to offer volume production while expanding product portfolio to enhance design inspiration. (<http://oledworks.com/>)

About OPVIUS

OPVIUS GmbH (formerly BELECTRIC OPV) was founded in 2012 and is located in Nuremberg (R&D) and Kitzingen (Manufacturing Center at INNOPARK Kitzingen), Germany. OPVIUS develops and manufactures organic solar cells and focuses on the commercialization of customized OPV solutions. The company cooperates closely with established partners in the fields of science, industry, energy production, electronics, and architecture.

With over 100 customers and projects in more than 15 countries, OPVIUS is one of the leading organic PV providers worldwide. Its position as a technical leader is the result of a high degree of vertical integration in development and manufacturing processes. With our team of scientists, engineers and manufacturing experts we create customized OPV solutions for your application according to your requirements, thus making full use of the intrinsic advantages OPV offers.

(<http://www.opvius.com/>)

About Kolon Industries, Inc.

Our journey to bring change to customers began in 1954. To exceed the expectations of customers through innovation and enrich their lives - this has been our goal and the path that we have taken over the past six decades. Our vision, Lifestyle Innovator, reflects our determination to innovate the lifestyle of our customers by providing products and services that improve their quality of life.

(<http://kolon.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 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.