

Trade Press Release

Leverkusen, 29.05.2015

Heraeus and BELECTRIC OPV deepen collaboration for next-generation Organic Photovoltaics

- A long envisaged market for energy harvesting has now truly emerged allowing new concepts in design and production to be realised offering tremendous potential for growth

Nuremberg/Leverkusen, Germany: The ability to produce organic photovoltaic (OPV) products in various shapes and colors has been illustrated by BELECTRIC OPV at the German Pavilion at the International EXPO in Milan, Italy. The large OPV surfaces are integrated into tree-like structures creating a big canopy over the pavilion. The effect is an attractive, futuristic architecture that generates electricity. This way OPV can energize almost any surface.

Heraeus, a partner of BELECTRIC OPV in development of organic photovoltaics, plays a key role in BELECTRIC's innovative technology through the supply of vital components. Clevios™ conductive polymer materials based on PEDOT:PSS provide the hole-transport layer, and low temperature SOL silver pastes serve as the electrode in the devices. Both materials are processed by roll-to-roll coating and printing so providing high throughput at low cost. The mutually beneficial cooperation between BELECTRIC OPV and Heraeus on new materials and processes to improve the viability of OPV even further demonstrates the positive impact along the supply chain. Using state-of-the-art materials in combination with innovative wet-coating based manufacturing processes, BELECTRIC OPV is able to supply the market with customized, aesthetically pleasing OPV solutions.

Heraeus, a leading supplier of metallization pastes used in crystalline silicon PV solar cells, is expanding its product range to include next generation PV technologies with low temperature silver pastes along with OPV grades of Clevios™ PEDOT based conductive polymers. Clevios™ is already extensively used in antistatic, touch sensor and emerging OLED applications. Heraeus has ton-scale production capacity for these materials.

"Open innovation approaches, like the joint-development effort together with Heraeus for example, is part of our R&D strategy", reveals Andreas Distler (Head of R&D, BELECTRIC OPV). "In order to bring OPV technology to its best, it is important that a holistic development approach is applied throughout the whole device architecture and the manufacturing process." This also adds to the great potential for scalability of printed OPV manufacturing. Armin Sautter, (Manager at Heraeus New Businesses) stated: "Heraeus has over 45 years' experience in the development thick film metallization pastes and conductive polymers. Partnerships with new technology leaders, such as BELECTRIC, who provide unlimited shapes,

colours and even flexibility, is an entirely new dimension for PV technology. BELECTRIC OPV's vision for photovoltaics is consistent with ours - using technology and innovation to achieve sustainable green energy."



© Lapp Group

About the German Pavilion Participants

The Organic Photovoltaic Technology Consortium (ARGE OPV) is the partner network for the development and installation of the organic photovoltaic technology in the German pavilion. The ARGE OPV is made up of the companies BELECTRIC OPV, Carl Stahl GmbH, Hager SE, U.I. Lapp GmbH, Merck KGaA and Schmidhuber. The project is being supported by the German Federal Ministry of Education and Research. The design, planning and realization of the German Pavilion have been taken on by the German Pavilion Expo 2015 Milan Consortium (ARGE), made up of Schmidhuber, Milla & Partner and Nüssli Deutschland.

About BELECTRIC® OPV

BELECTRIC OPV GmbH, with offices in Nuremberg and Kitzingen, is the market leader in the area of organic photovoltaics. BELECTRIC OPV produces bespoke organic solar cells and systems, tailored to customers' specific requirements. Furthermore, BELECTRIC OPV is active in the area of research and development, in order to continuously provide their customers with creative and innovative solutions. Additionally, BELECTRIC OPV employs a unique manufacturing process, based on a combination of printing, lamination and laser structuring processes. These give a distinct advantage due to their high scalability and, moreover, allow the implementation of custom designs. BELECTRIC OPV supports its customers with the integration of OPV in existing as well as new products and delivers the accompanying system solutions. BELECTRIC OPV

Seite 3

currently has two product lines: SOLARTE® for architects and designers and POWER PLASTIC® for large scale industrial applications. Products from BELECTRIC OPV stand for innovation, quality, and design. Further information can be found at www.solarte.com.

Heraeus, the technology group headquartered in Hanau, Germany, is a leading international family-owned company formed in 1851. With expertise, a focus on innovations, operational excellence and an entrepreneurial leadership, we strive to continuously improve our business performance. We create high-quality solutions for our clients and strengthen their competitiveness in the long term by combining material expertise with technological know-how. Our ideas are focused on themes such as the environment, energy, health, mobility and industrial applications. Our portfolio ranges from components to coordinated material systems which are used in a wide variety of industries, including the steel, electronics, chemical, automotive and telecommunications industries. In the 2014 financial year, Heraeus generated product revenues of €3.4 bn and precious metal revenues of €12.2bn euros. With around 12,600 employees worldwide in more than 100 subsidiaries in 38 countries, Heraeus holds a leading position in its global markets.

For additional technical information, please contact:

John Bayley
Marketing Clevios™
Heraeus Deutschland GmbH & Co. KG
Business Line Display and Semiconductor
Building B202, Chempark
51368 Leverkusen Deutschland
john.bayley@heraeus.com
www.clevios.com

Trade Press contact:

Guido Matthes
Manager PR
Heraeus Holding
Corporate Communications & Marketing
63450 Hanau, Germany
Phone: +49 6151 35-4583
Fax: +49 6151 35-4242
E-Mail: guido.matthes@heraeus.com