

Press Release

## **Heraeus Announces Significant Battery Performance Gains with Porocarb® Additive at Battery Show**

**Company achieves 20% improvement in volumetric energy density, announces expansion to Supercap and Lead Applications.**

NOVI, MICHIGAN- September 14, 2016- Heraeus, the world's sole producer of synthetic carbon functional additives, announced today that recent testing has proven new battery performance gains with its Porocarb® porous carbon powders. This new research, based on actual customer pilots, confirms the product's unique properties as a catalyst for improving battery capabilities and power capacity, particularly in the electric/hybrid automotive market.

Porocarb, commercially introduced in 2014 after three years of research, is a new product family of conductive porous carbon powders for electrochemical applications such as battery additives. The carbon particles, with pore-size distribution ranging from 10 and 1,000 nanometers and internal pore volumes up to 2.5 cubic centimeters per gram, provide an innovative solution for lithium-ion batteries to improve performance and lifespan without increasing size.

At a presentation at The Battery Show on September 13, Dr. Dominik Samuelis, Head of Innovation for Porocarb, noted the company's most recent success in achieving a 20% improvement in volumetric energy density compared to a well-established industrial 30 Ah reference cell. "This is a major milestone and it clearly demonstrates the real-world impact Porocarb can have in Lithion-Ion cells," he said. These promising results, conducted in Heraeus's fully-equipped Lithion-Ion lab, were achieved in collaboration with several pilot customers during all steps of slurry, electrode and cell production.

The success of Porocarb in improving performance of Lithion-Ion batteries has led Heraeus to expand research to include Supercap and Lead Acid applications. Dr. Samuelis noted that the Porocarb S-CAP product line, which is officially launching at The Battery Show, demonstrates the versatility of its synthetic porous carbon powders. He said, "Surprisingly, even in Supercaps, with their inherently high power, Porocarb is still able to greatly improve power capabilities."

### **A Catalyst to Accelerate Renewable Energy**

According to Thomas Hucke, Head of Battery Technology for Heraeus, the global demand for clean, affordable and sustainable energy will require a major transformation across the battery industry to find ways to lower costs and improve battery capacity and capabilities. Citing just two examples- the commitment of the G20 Energy Ministers to increase renewable energy worldwide and the growth of electric/hybrid automobiles between 14.7 and 18.6 percent annually- battery innovation is a must.

Hucke said, "In the electric/hybrid car market, everything is completely dependent on the battery. If battery innovation lags, market growth and

consumer demand will stagnate.” He identified three critical areas the industry must address: charging times need to be faster, capacity has to increase and costs need to come down to remove barriers to adoption. “That’s why we are so excited about the latest achievements we’ve seen with Porocarb,” Hucke said. “Whether it is lead acid batteries, lithium-ion batteries and supercapacitors, Porocarb additives can make batteries more durable and efficient in performance and manufacturing cost.”

Heraeus will be exhibiting at The Battery Show in Novi, Michigan, September 13 to September 15. For more information on the Porocarb product family of battery additives, please visit:  
[https://www.heraeus.com/en/group/products\\_and\\_solutions\\_group/porocarb/porocarb.aspx](https://www.heraeus.com/en/group/products_and_solutions_group/porocarb/porocarb.aspx)

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## About Heraeus

**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 2015 financial year, Heraeus generated revenues without precious metals of €1.9 bn and a total revenue of €12.9 bn. With approximately 12,500 employees worldwide in more than 100 subsidiaries in 38 countries, Heraeus holds a leading position in its global markets

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