

Press Release

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Heraeus helps make solar cells more efficient

- Heraeus at the 27th European Photovoltaic Solar Energy Conference and Exhibition in Frankfurt

The 27th European Photovoltaic Solar Energy Conference and Exhibition (PVSEC) will take place in Frankfurt from September 24–28, 2012. The Heraeus precious metals and technology Group will present the latest product developments for the various generations of solar cells at the exhibition (Hall 3.0 / booth G16). Such products as infrared emitters, Xenon lamps, sputtering targets, quartz glass components and silver conductive pastes play a role in the manufacture of high-quality silicon and thin-film solar cells. PVSEC is considered the world's leading professional photovoltaics conference.

Silver conductive pastes for more efficient solar cells and lower costs per watt

Solar power is now an indispensable part of the energy mix and is steadily gaining importance. Silver metallization paste is needed to produce silicon and thin-film solar cells. The silver-based pastes make electrical contact with the wafer. "We are constantly developing new combinations for solar cell contact materials to improve them and boost their efficiency. Our clients' main requirement is to reduce the per-watt cost of solar electricity by using more affordable materials," according to Carsten Mohr, Head of the Photovoltaics business unit at Heraeus. The requirements for new generations of paste include high efficiency, low consumption, and reduced silver content. Heraeus offers customers a range of conductive pastes specially tailored to different cell designs and production technologies. The latest third-generation pastes for front-side contact, as well as pastes for back-side contact and new cell technologies will be presented at this year's PVSEC.

Infrared heat for nanosealing solar modules

Solar modules convert sunlight into electricity. They are installed on roofs or in open areas and exposed to a range of environmental factors. Deposits such as pollen or bird droppings can have a significant impact on the solar cells. A new nanosealant from the nanoproofed[®] Group means that such particles can be split photocatalytically and then easily removed by rain and wind. The sealant is applied to finished solar modules, and carbon infrared emitters from Heraeus Noblelight dry them quickly and efficiently. Tests of nanoproofed[®] show that solar modules with the nanosealant have an output up to five percent higher thanks to optimized transmission and the self-cleaning process.

Solar cells need high-tech material quartz glass

Quartz glass has become essential for high-temperature applications in photovoltaics: Its resistance to thermal shock, high chemical purity, and resistance to corrosion make this high-tech material irreplaceable. Quartz crucibles from Heraeus are used in the first manufacturing step for traditional solar cells: For monocrystalline wafers, a silicon monocrystal is drawn from a 1400°C silicon melt into a quartz glass crucible. Quartz components are used in wafer-based cell manufacturing both for the industrial production of solar silicon as well as the processing of silicon wafers into solar cells. Typical products include quartz glass boats, which are used as wafer carriers in high-temperature processes. Solar panels manufactured using thin-film technology also rely on components made of quartz glass.

Sputtering targets for manufacturing CIGS solar cells

Thin-film solar cells are gaining importance as an alternative to silicon solar cells. They are 100 times thinner than crystalline solar cells and require significantly less material in the production process. Sputtering is a key technology for the production of these thin layers, and the material source for the layers is the sputtering target. Heraeus develops high-quality targets for manufacturing thin-film solar cells, in particular indium, copper-gallium, and aluminum-doped zinc oxide (ZAO[®]) tube targets. The targets allow manufacturers of CIGS (copper indium gallium selenide) solar cells to cut costs thanks to improved sputtering performance and minimal material waste. Distinguished coating homogeneity makes solar cells more efficient. Heraeus supports the development of coating systems in its in-house sputtering lab, where the sputtering behavior of newly developed target materials is analyzed for the next generation of thin-film solar cells.

Heraeus provides detailed information about its contribution to the photovoltaics industry at www.heraeus-photovoltaics.com.

Heraeus, the precious metals and technology group headquartered in Hanau, Germany, is a global, private company with over 160 years of tradition. Our fields of competence include precious metals, materials and technologies; sensors; biomaterials and medical products, as well as dental products, quartz glass, and specialty light sources. With product revenues of €4.8 billion and precious metals trading revenues of €21.3 billion, as well as more than 13,300 employees in over 120 subsidiaries worldwide, Heraeus holds a leading position in its global markets.

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