

## Press Release

Hanau (Germany), April 20, 2011

### **Earth Day 2011: Save energy with the right glass coating**

- **Coated glass protects the environment and climate all year round – Heraeus is a provider of these coating materials**

April 22 is Earth Day in more than 150 countries, and the motto for Earth Day 2011 is “A billion acts of green.” Earth Day has been celebrated internationally since 1990, and one of this year’s themes is “Climate protection starts in the cities.” Anyone who looks closely at office buildings and high-rises can see that the large panes of glass seem to shimmer in brown, blue or green hues. A fine coating of metallic and precious metal alloys on the glass produces these colors. The coating is only a few nanometers thick and can be applied to both interior and exterior glass surfaces using a vacuum coating process. It not only helps fulfill architectural design requirements, it also makes a solid contribution to climate and environmental protection by reducing heat loss and lowering energy costs. Almost every new window produced in Germany, for example, has at least one coated surface. The glass industry turns to Heraeus for meter-long planar and tube-shaped sputtering targets made for large-surface coating processes for architectural glass.

Coated window glass is an integral component of year-round energy-saving strategies in modern office buildings and residences. Solar control glass ensures that heat radiation from the sun does not warm up rooms in the summer, thereby reducing energy consumed by air-conditioning systems. Conversely, a targeted coating on the interior side of the glass (low emissivity glass) enables the surface to reflect heat back into the room during winter, substantially reducing heat loss through the windowpanes. Coatings containing silver, in particular, work well to reduce heat loss and energy costs in modern buildings.

#### **In-house lab system optimizes sputtering targets for coating glass surfaces**

Materials from sputtering targets are deposited directly onto glass sheets with the help of sputtering technology. During the sputtering process, a negative electrical charge is applied to the target. Combined with the inert gas argon, this generates a high-energy discharge of gas – also called plasma – in a vacuum chamber, from which argon ions are fired at the target. The positively charged gas ions knock individual atoms off the surface of the target, which then condense on the base material as an extremely thin coating.

When it comes to development, optimization, and functional testing, researchers at Heraeus have an important in-house system to help them. The

Thin Film Materials Division's research and development department conducts rapid testing on newly developed planar and tube-shaped sputtering targets with a sputtering system in its lab. "This drastically decreases development time and enables a completely new type of collaboration with our customers. The sputtering system is a key instrument in our development and optimization work," emphasizes Martin Schlott, Head of Development for the Thin Film Materials Division at Heraeus. The requirements for sputtering targets are extremely stringent. They must be of the utmost purity (99.95 to 99.999 percent), have a high density, high chemical homogeneity, a fine, homogenous microstructure, and be completely free of even the smallest flaws and pores.

### **Sputtering targets coat solar cells in photovoltaics**

Sputtering targets from Heraeus are also used in manufacturing solar cells, particularly in thin-film photovoltaics. Layers that minimize reflection are applied during the coating process, for example. This minimizes losses arising from the unwanted reflection of solar radiation on the solar module and boosts cell efficiency. Even the absorber layer – the core element of photovoltaic cells – is sometimes produced using a sputtering process. The latest targets developed by Heraeus are also used in this application. The performance of solar cells depends on quality of this sputtered layer and especially on the coating material. (Sputtering targets at Heraeus: [www.heraeus-targets.com](http://www.heraeus-targets.com) )

You can find more information about Earth Day 2011 and the associated activities at [www.earthday.de](http://www.earthday.de).

Heraeus, the precious metals and technology group headquartered in Hanau, Germany, is a global, private company with over 155 years of tradition. Our businesses 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 € 2.6 billion and precious metal trading revenues of € 13.6 billion, as well as more than 12,300 employees in over 110 subsidiaries worldwide, Heraeus holds a leading position in its global markets.

---

### **For additional information, please contact:**

Dr. Jörg Wetterau  
Corporate Communications  
Head of Technology Media & Innovation  
Heraeus Holding GmbH  
Heraeusstr. 12-14  
63450 Hanau, Germany  
T +49 (0) 6181.35-5706  
F +49(0) 6181.35-4242  
[joerg.wetterau@heraeus.com](mailto:joerg.wetterau@heraeus.com)  
[www.heraeus.com](http://www.heraeus.com)

**Images for press release:**



Earth Day 2011: Coated glass protects the environment and climate all year round. (Photo: Heraeus)



Earth Day 2011: The glass industry turns to Heraeus for meter-long planar and tube-shaped sputtering targets made for large-surface coating processes for architectural glass. (Photo: Heraeus)