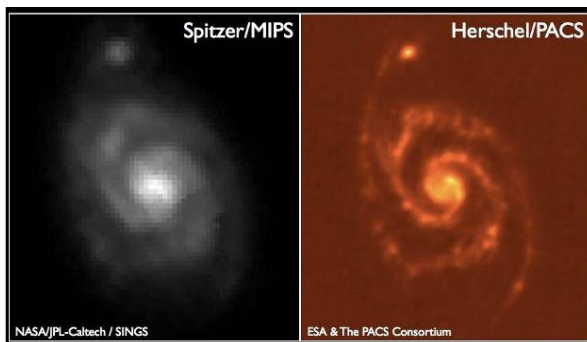


## High-tech Material from PVA TePla High-temperature System Helps Provides New Insights into the Universe

**(Wettenberg, August 12, 2009) – PVA TePla AG, Wettenberg, producer of special systems for manufacturing high-tech materials, developed and built a high-temperature vacuum furnace in which segment parts for the Herschel telescope were sintered.**

After several years of development and planning, the European space telescope was launched by rocket on May 14, 2009. Just a few weeks later, scientists were fascinated by the first pictures, which show objects far away from the Earth in unprecedented detail (see comparison photo).



Comparison of image quality between the Spitzer telescope (2003, left) and the new Herschel telescope (2009, right).

The centerpiece of the satellite is the biggest mirror ever built for space applications. With a diameter of 3.5 meters, it is approx. 1.5 times bigger than that of the famous Hubble telescope.

Due to the extreme requirements in terms of weight, mechanical stability and resistance to the temperature fluctuations that occur in space, silicon carbide (SiC) was chosen for the mirror material. SiC is a ceramic material that is produced at high temperatures in a vacuum.

PVA TePla has been specializing in these extreme production conditions for high-tech materials for many years. Ultimately, the company was commissioned by a French customer to build a large high-temperature vacuum system. Segments of the space mirror shaped like slices of cake were sintered in this system in a vacuum at 2000°C, giving them their hugely robust structure.

# Press Release



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Mirror segments during preassembly and the finished mirror during the visual inspection.

The Herschel telescope is now "parked" at the Lagrange point  $L_2$  approx. 1.5 million km from the Earth, from where it relays images from the depths of the universe with its two infrared cameras and a spectrometer.

In the next three years or so, scientists expect to receive new findings on the formation and development of galaxies, the composition of comets and surfaces and atmospheres of planets in our solar system.

Photos are attached to this press release in the PDF document below.

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Images: ESA

Further information from ESA (English): <http://sci.esa.int/herschel>