

Press release

January 18, 2001

Umicore progresses with Research Partnerships in the substrates area

The European space agency grants an EUR 2.84 million research contract to Umicore

A new co-funded research project of ESA and Umicore worth EUR 2.84 million will focus on the development of thinner robust germanium substrates. It will combine the optimisation of existing processes with radical new technologies to increase the strength of these highly sophisticated substrates, used in solar cells.

In line with global trends towards faster information transfer, the need for efficient communication tools has increased significantly and will further develop in the coming years. This is reflected in the growth of cellular phones, computers and internet connections. Many of the related communication systems and infrastructure use optical fiber for data transmissions. However, particularly for the long distance and for areas where optical fibers are not available, satellite systems are the number one choice for data transfer. To maximise the capacity of a satellite and at the same time minimise the launching costs, the power systems have to be very efficient. The new generation of powerful satellites is equipped with solar cells based on gallium arsenide grown on germanium substrates with efficiencies up to 25%.

ESA and Umicore are working together to increase the efficiency of the solar cells and at the same time to reduce the weight. To have a good conversion of light in electricity only a few tens of microns thickness is sufficient to have maximum benefit for solar light conversion. Until now thickness reduction has been limited due to mechanical strength requirements. Based on recent technological improvements the production of thinner solar cells with acceptable mechanical strength became feasible.

Umicore is the world leader in the production of germanium substrates for solar cells. This product has been developed for the space applications but has promising characteristics for the terrestrial markets. The 'Nuna' solar vehicle which won the Australian car race recently demonstrated this. It was equipped with high efficiency solar cells based on germanium technology. Umicore produced the substrates for the solar cells of the "Nuna".

n.v. Umicore s.a.
Corporate Communication

Broekstraat 31 Rue du Marais Phone +32 2 227 70 63
B-1000 Brussels, Belgium Fax +32 2 227 79 03
www.umicore.com e-mail info@umicore.com

BTW BE401 574 852
Bank 210-0053806-23 - TRB 85382
Registered Office: Broekstraat 31 Rue du Marais, B-1000
Brussels

Results of collaborative effort between Umicore and IMEC on sustainability of technologies used in space solar cell manufacturing.

The solar cell production technology currently used by Umicore's customers makes use of toxic products such as arsine. This could become a threat to future sustainability of this application. Therefore Umicore initiated a research programme with the aim of replacing the highly toxic reagents by products with much lower risk factors. This development work was performed within the framework of an IMEC-Umicore research programme and supported by the Flemish Government through IWT-funding. The first results of this work are very encouraging : the efficiency of the solar cells produced using the low risk reagents exhibits light-to-electricity conversion efficiencies of 24.5%, comparing very favourably even with the highest ever reported efficiency of 24.3 % for this type of solar cells. It is Umicore's firm intention to continue proactively supporting technologies crucial for applications in which its products are used.

For more information:

n.v. Umicore s.a.:

Press: Mrs Moniek DELVOU - Tel. +32 2 227 70 63 * +32 475 26 64 95 – moniek.delvou@umicore.com

Investor Relations: Mrs Isabelle MICHOTTE - Tel. +32 2 227 71 47 – isabelle.michotte@umicore.com

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PROFILE

Umicore is the new name Union Minière adopted on 3 September 2001.

Umicore is an international metals and materials group, which strives to obtain leadership positions in selected markets. Its activities are centred on 3 main business groups: Copper & Precious Metals, Zinc and Advanced Materials. To ensure a rapid response to market openings, each business group is divided into several business units.

The Umicore Group has industrial operations on all continents and serves a global customer base through an international sales network with offices in more than 25 countries.

The underlying principles of Umicore's strategy across the various business groups are a commitment to technological innovation, operational excellence, recycling and environmental responsibility.

The Group generated a turnover of EUR 3.8 billion in 2000. Umicore currently employs some 8,200 people.

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