



Polymer pellets – basis of new energy-saving technologies.

## NEW SOLAR CELLS – ORGANIC AND FINE AS CLING-FILM

**ONE-P** (Organic Nano-materials for Electronics and Photonics) is the name of a new research project at UW. Funded by the EU, 28 partner institutions from 11 European countries are cooperating in the development of innovative high-performance organic materials, and in the market launch of electronic components incorporating them.

Organic light sources are already being used in everyday electronic devices like cell phones, MP3 players, electric razors, and even the first TVs equipped with organic light-emitting diode (OLED) displays. UW's current pro-

ject has been working on the production of solar cells from similar organic materials. These will have the advantage over conventional inorganic silicon-based cells of being as flexible and thin as cling-film. So they will be cheaper, lighter, and more versatile, as well as beneficial to the environment. Selection of suitable organic materials will lower the ecological footprint of production processes, as well as facilitating disposal and recycling.

### ORGANIC SEMICONDUCTORS MADE IN WUPPERTAL

The new materials are being developed by macromolecular chemists at UW's Institute of Polymer Technology. The production of these plastics, consisting of long molecular carbon chains, begins with the synthesis of their smallest components, the monomers. Careful selection and integration of monomers in the molecular chain enables UW chemists to influence the properties of the plastic to meet the requirements of a variety of applications.

### TEAMWORK SOLUTIONS FOR THE FUTURE

From Wuppertal the semiconductors are handed on to our partners in physics and electrical engineering – e.g. the Interuniversity Microelectronics Centre (IMEC) in Louvain (Belgium), one of Europe's biggest nano- and micro-electronic research centers, or the University of Cambridge's Cavendish Laboratory – who test the materials for their suitability in specific applications like LEDs or solar cells. Using the results of these tests, UW chemists can then modify their materials. Close cooperation in the exchange of ideas and results is essential for the success

of the project, which involves specialists in organic electronics from fifteen universities, five research centers and eight leading corporations.

### SOLAR CELLS BY THE METER

The flexibility of these new semiconductor plastics allows them to be produced in rolls, which is not only an inexpensive way of manufacturing large area modules on flexible substrates, but is also environmentally friendly. Less energy and significantly less material is needed for the production of electronic components in this way than is the case with conventional high temperature technologies.

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