

New EU project MUJULIMA to improve OPV efficiency and lifetimes

May 1st, 2014 - A new EU-funded research project aims to speed the development of more efficient and versatile solar cells. Comprising ten European universities, companies and organizations, the MUJULIMA project is targeting cost-efficient organic photovoltaic (OPV) cells that enable module efficiencies above 15% and lifetimes of over 10 years. In particular, the partners will focus on developing new high-performance materials and improved light management for multi-junction OPVs.

“To meet growing demand for energy while addressing environmental concerns, the world needs a greener mix of energy sources. Solar power will play a key role in that mix. Lightweight, with huge freedom in color, substrate and design, and compatible with high-throughput production processes, OPVs promise cost-competitive, versatile solar panels that look attractive and can be integrated directly into construction and automotive components. Through the MUJULIMA project, we aim to bring multi-junction OPVs up to the performance and durability levels required for commercial applications,” said project coordinator Jan Gilot of TNO.

To achieve this, the program has three key objectives. Firstly, the design and synthesis of innovative photoactive and interlayer materials for creating multi-junction OPVs. Secondly, developing up- and down-converter materials and optimized nanostructure arrangements to maximize the use of the incident light. Finally, improving the outdoor performance of existing encapsulation methods and finding correlations between indoor accelerated testing protocols and outdoor lifetimes.

Moreover, the project will focus on solution-based manufacturing processes, particularly inkjet printing methods which allow solar cells to be produced in any shape imaginable. The project will demonstrate its achievements in three applications: small, indoor OPVs for smart home devices, medium-sized panels for urban furniture and a large, flexible “solar roof” for commercial buses.

Funded through the European Union’s Seventh Framework Programme (FP7), the MUJULIMA project will run until December 31, 2016. For more information, please go to www.mujulima.eu or follow [@MUJULIMA](https://twitter.com/MUJULIMA) on Twitter.

Consortium members

- TNO (Netherlands)
- imec (Belgium)
- ECN (Netherlands)
- Eindhoven University of Technology (Netherlands)
- University of Wuppertal (Germany)
- CEA-LITEN (France)
- PCAS (France)
- DisaSolar (France)
- NEN (Netherlands)

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About TNO

The 3800 TNO professionals put their knowledge and experience to work in creating smart solutions to complex issues. These innovations help to sustainably strengthen industrial competitiveness and social wellbeing. We are partnered by some 3000 companies and organisations, including SMEs, in the Netherlands and around the world. On the topic of Healthy Living we initiate technological and societal innovation for healthy living and a dynamic society.

For more information about TNO and the seven societal themes that are the focus of our work, go to www.tno.nl.

About imec

Imec performs world-leading research in nanoelectronics. Imec leverages its scientific knowledge with the innovative power of its global partnerships in ICT, healthcare and energy. Imec delivers industry-relevant technology solutions. In a unique high-tech environment, its international top talent is committed to providing the building blocks for a better life in a sustainable society. Imec is headquartered in Leuven, Belgium, and has offices in Belgium, the Netherlands, Taiwan, US, China, India and Japan. Its staff of over 2,080 people includes more than 670 industrial residents and guest researchers. In 2013, imec's revenue (P&L) totalled 332 million euro. Further information on imec can be found at www.imec.be. Stay up to date about what's happening at imec with the monthly imec magazine, available for tablets and smartphones (as an app for iOS and Android), or via the website www.imec.be/imecmagazine.

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About ECN

With and for the market, ECN develops knowledge and technology that enable a transition to a sustainable energy system. Countries and their economies develop and grow. To meet the future energy needs, the world's energy system needs to become (more) sustainable. ECN's groundbreaking renewable energy technologies and knowledge offer businesses and governments economic opportunities and innovative distinctiveness. ECN plays a leading role in energy R&D and policy advice and has gained a strong reputation worldwide in the fields of solar and wind energy, bio-energy, energy efficiency, environmental research and policy studies. Our track record of success is illustrated by the fact that over 60% of all solar modules in the world contain ECN technology and 80% of Europe's offshore wind farms is realised with R&D and support from ECN. With around 500 professionals and multiple branches in Europe and Asia, ECN works on sustainability every day.

About Eindhoven University of Technology

Eindhoven University of Technology (TU/e) is a research university specializing in engineering science & technology. Our education, research and knowledge valorization contribute to:

- science for society: solving the major societal issues and boosting prosperity and welfare by focusing on the Strategic Areas of Energy, Health and Smart Mobility
- science for industry: the development of technological innovation in cooperation with industry
- science for science: progress in engineering sciences through excellence in key research cores and innovation in education

About University of Wuppertal

Founded in 1972, the University of Wuppertal is a modern, independent university in the Humboldtian tradition. Its twin goals are academic excellence in its individual disciplines and the consistent development of the interface between these disciplines and the world of practical experience – in a word, the transfer of knowledge and technological know-how. In 2013/14 the University enrolled more than 19.000 students in 7 faculties and one cross-sectional School of Education.

About CEA-LITEN

Based mainly in Grenoble and Chambéry (INES), Liten (Laboratoire d'Innovation pour les Technologies des Energies Nouvelles - Laboratory for Innovation in New Energy Technologies) is one of Europe's most important centres for research into new energy technologies.

Liten's mission is to support France's efforts to diversify its energy mix, in particular to meet energy requirements in transport, housing and mobile electronics. It also seeks to make businesses more competitive. Liten works hand in hand with industry - with 400 research partnership contracts every year - and is one of the CEA laboratories with the most patents (185 patents filed in 2011, 200 in 2012), managing a portfolio of 840 international patents.

About PCAS

PCAS is a French group specialized in the design, development, manufacturing and marketing of fine chemicals (for markets human and veterinary pharmaceuticals, perfumery, cosmetics, and agrochemicals) and specialties (for electronic markets, photography, graphic arts, glass, industrial lubricants and additives). International supplier of high added value

complex molecules, fine chemicals and custom synthesis services PCAS serves globally industrial customers since 1962.

PCAS has resources and facilities for research and development tailored to the industrialization of products or processes and production tools for manufacturing a wide range of products with high technological content in amounts ranging from several hundred kilograms for products with the highest added values to several hundred tons for the others.

Website: www.pcas.com

About DisaSolar

DisaSolar is a leading French company in the thin-film photovoltaic field. The company commercializes and installs "second generation" PV modules. It also pursues other activities in the development of "third generation" OPV (Organic Photovoltaic) cells, using organic materials. DisaSolar is on the way to becoming a world leader in the manufacturing of printed organic solar modules, bringing numerous prestigious French and international laboratories together. This leadership is also based on the skills brought by its reference shareholder: the Disa/Megamark group, specialized in visual communication.

More information: <http://www.disasolar.fr/en/>

About NEN

Proper agreements on products and work methods are extremely important. Where safety is concerned, they are of vital importance. Examples include safety of playgrounds, buildings, the formulation of evacuation plans, and anti-terrorism procedures. NEN is the Dutch network of expertise in the world of standards and rules. NEN assists organizations and other parties to mutually enter into clear and suitable agreements and to implement these agreements. NEN also represents Dutch organizations and companies in order to enter into agreements with centres in other countries at European and global level.

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