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EU project SCALENANO Merck provides technological knowledge for the development of energy- and cost-efficient photovoltaic modules



With a budget of more than € 10 million, the European Union (EU)'s SCALENANO project aims to increase Europe's competitiveness in photovoltaic technology by developing highly efficient, low-cost production processes for CIGS thin-film solar cells. As specialized materials supplier for applications requiring a high level of purity, reliability, and formulation know-how, Merck takes an active part in the SCALENANO consortium of 13 renowned companies and scientific institutions*.

Chalcogenide-based photovoltaic (PV) technologies have already entered mass production. However, their vacuum-based deposition processes require high capital expenditures that override the cost benefits of thin-film technologies. Objectives of SCALENANO are the development and scale-up of new vacuum-free, high-throughput, and cost-effective deposition processes for CIGS absorber layers based on electrodeposition of nanostructured precursors as well as printing techniques using nanoparticle ink formulations.

Within the project, Merck focuses on the preparation, formulation, and deposition of CIGS nanoparticles. In cooperation with IREC (Catalonia Institute for Energy Research), EMPA (Swiss Federal Laboratories for Materials Science and Technology Development) and IIT (Italian Institute of Technology) Merck is evaluating the preparation and scale-up of CIGS nanocrystals. Merck also develops ink formulations and printing procedures for the preparation of CIGS and layers on small and up-scaled large area substrates. SCALENANO benefits not only from Merck's high competence in scaling up synthesis to a mass production level, but also from its established quality control and reliability processes as well as its global supply chain.

"With the development of nanobased, printed CIGS solar cells, photovoltaics is making a giant leap towards the future. The technology uniquely combines environmental and economic benefits, strengthening competitiveness and optimizing the energy supply," forecasts Klaus Bofinger, Head of Advanced Technologies at Merck.

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