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LUMINOSITY project

Enabling the next generation of solar energy

Evaporation of cesium iodide using an anodic arc. Image: Fraunhofer FEP

The EU-funded LUMINOSITY project brings together research and industry partners across Europe to further develop perovskite solar cells on flexible substrates. The project partner Fraunhofer FEP is making promising progress in the deposition of tin oxide and cesium iodide using its expertise in anodic arc evaporation. According to Fraunhofer FEP, „these innovative technologies are the basis for the development of flexible perovskite solar cells, which will enable environmentally friendly solar energy of the next generation." In the European Union-funded LUMINOSITY project, 15 research and industry partners from nine European countries are working together to establish the essential fundamentals for perovskite solar cells on flexible substrates. Project partner Fraunhofer FEP is investigating, among various other aspects, whether the anodic arc evaporation process developed by the institute is suitable for use in perovskite photovoltaics. This process uses a special electron source (hollow cathode arc discharge) and offers advantages for the targeted adjustment of layer parameters for a variety of materials. The combination of evaporation and plasma processes allows precise customisation of the layer properties. In previous projects, it has already been shown that the anodic arc evaporation can produce high-quality, droplet-free and smooth, extremely hard carbon layers for applications such as hard coatings. The anodic arc evaporation has also been used to successfully deposit transparent conductive layers for the next generation of silicon heterojunction solar cells. So far, the method could only be used for electrically conductive materials. However, the LUMINOSITY project has achieved promising initial results for the deposition of tin oxide and cesium iodide. (bm)