

December 2016

Smartonics project successful completion

Advent Technologies participated in a 4-year FP-7 project with the title: "Development of smart machines, tools and processes for the precision synthesis of nanomaterials with tailored properties for organic electronics". The project involved partners from Greece (Aristotle University of Thessaloniki, University of Patras, University of Ioannina, Advent Technologies, Compucon, OET), Germany (Coatema, University of Stuttgart, Fraunhofer POLO, HZB, AIXTRON), United Kingdom (University of Surrey, University of Oxford, Oxford Lasers), France (CNRS, HJY) and Italy (FIAT) as the end customer.

Advent was mainly involved with the synthesis and upscaling of polymer donors. Single polymer batches of up to 50g (e.g P3HT) were synthesized. Several optimization techniques were employed that led to a synthetic protocol for even higher upscaling. In addition, experiments and testing that was carried out from different partners showed that the materials produced by Advent Technologies could be compared in efficiency with commercially available ones.

Furthermore, the company managed to reduce the cost for the production of the polymer donors and also to be able to project costs for multi-Kg synthesis.

The materials produce by Advent, were successfully integrated into the roll-to-roll pilot line, and flexible OPV devices were fabricated and tested.

Summary of the key project results:

- Synthesis of both donor and acceptor molecules in large scale
- Development of roll-to-roll machine for continuous production of flexible OPV's
- Development of barrier films for encapsulation
- Development of lasers for different functions in the pilot line
- Installation of the technology on the roof of a car (solar roof, 12W)

Possible applications include BIPV, automotive industry, textile opv and many more.



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