

## MICRO- CPVS Space Systems and Technology (MICRO-CPVS)

**Project Coordinator:** IMT Bucharest; **Contact person:** Dr. Elena Manea, elena.manea@imt.ro;

Project MICRO-CPVS is the short name of MICRO-CONCENTRATOR with Photo Voltaic Cell Systems for all space applications including an innovative design system architecture and system assembly based on the patented micro-technologies. This MICRO-CPVS© project proposal for space technology developments is set for Phase 1a (Q1-14) of joint AST and TASF joint industrial request to support the emergence of a key and promising technologies call on the improvements of the Next Generation European GEO telecommunication satellites competitiveness related to introduction and developments of the innovative technologies to support an increased performance efficiency by 15%, a mass reduction with 10%, increased reliability 15%, and cost savings of 20%.

**Estimated results.** The project will deliver entirely new solutions for the EU space industry in general, and particularly for the Romanian Aerospace Industry, a critical space technology that will improve actual European strategic agenda for non-dependence, having a major impact on the space industry production developments, over space mission operational costs, space solar cell power systems, space safety, increased life-cycle and space mission endurance for all kind of space services provide by satellite systems, ISS, robotic spacecraft systems, and during the future space exploration.

### Consortium members:

- **National R&D Institute for Microtechnologies- IMT Bucharest;** Dr. Elena Manea (elena.manea@imt.ro)
- **European Business Innovation and Research Centre SA, EBIC,** Eng. Simion Dascalu (simiondascalu@gmail.ro).

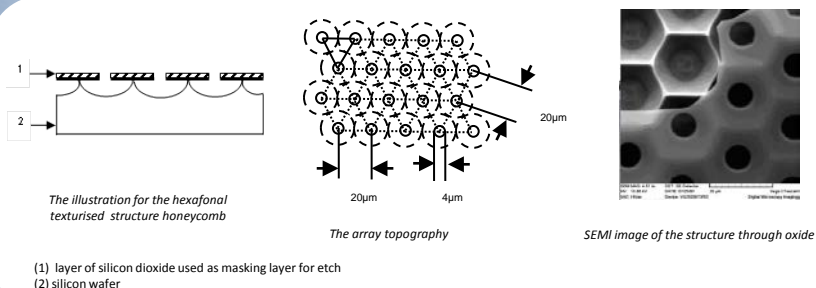
**Sub-Contracting organization:** Aerospace Industry: SC ROMAERO S.A.

### Basic research:

#### Microconcentrator for high efficiency solar cells with applications in space – preliminary research results

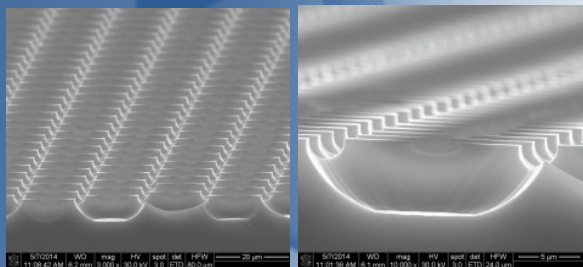
Microconcentrator for solar cells developed from the patent application No 5 - TCI / 2005, authors: Elena Manea, I. Cernica, N. Dumbravescu

The manufacturing process is based on Silicon micromachining processes used as a mold for getting the array networks of polymer microlenses

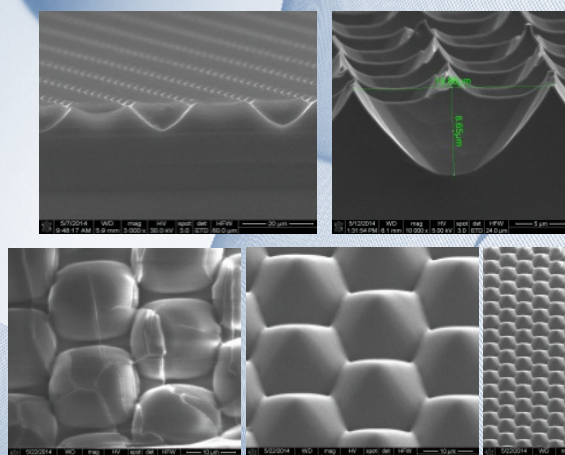


**November 2013 -December 2015**

### Preliminary results:



SEM images for type of mould obtained by isotropic etched of Si material



SEM images for microlenses of polymer obtained through replication with the above moulds

SEM images for type of mould obtained by isotropic and anisotropic etched of Si material combined