

FLOIM

Flexible Optical Injection Moulding of optoelectronic devices

**“Flexible Optical Injection Moulding for Manufacturing
of Complex Optoelectronic Devices”**

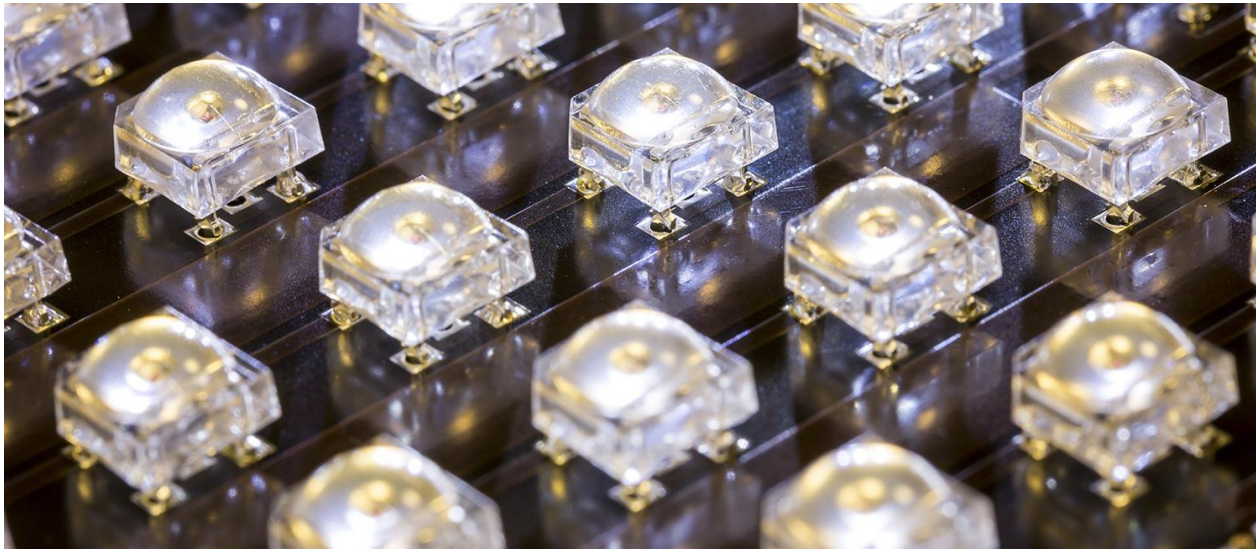
General Project Overview



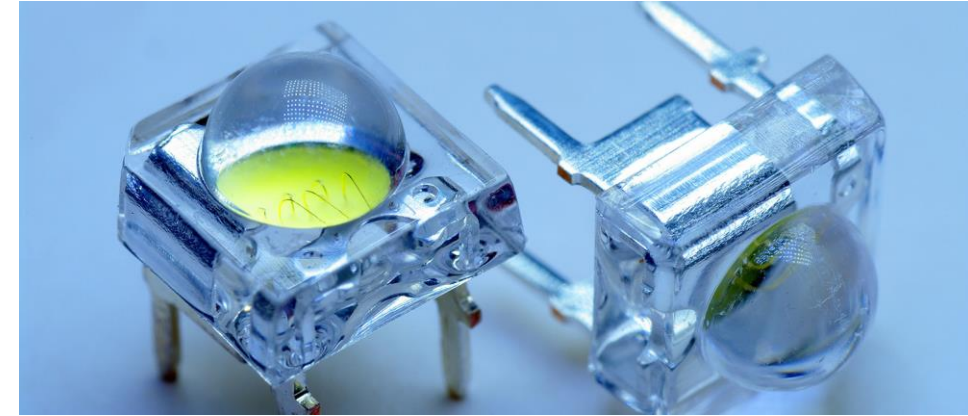
FLOIM Approach

- Miniaturized, integrated photonic devices are driving an increasing number of applications, while facing an increasing pressure to lower cost and increase flexibility.
- The production chain for optoelectronic device manufacturing is inherited from microelectronics.

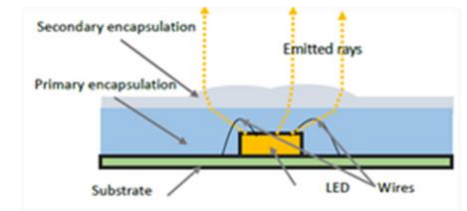
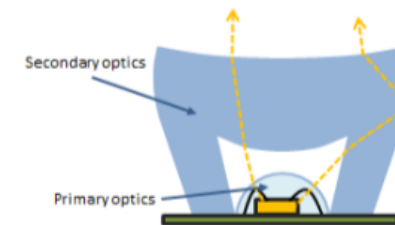
FLOIM concerns a new, automatized manufacturing technology for the production of optoelectronic components and the assembly of the corresponding optical system, based on the use of thermoplastic materials and the embedding of all the components into a compact and robust unique device. This technology permits to overcome current manufacturing limitations and magnifies the design possibilities.



- Low Cost concept for optical mounting and embedding of electrooptical microdevices.
- Reduce number of steps and the sources of error. Microoptics manipulation problems.



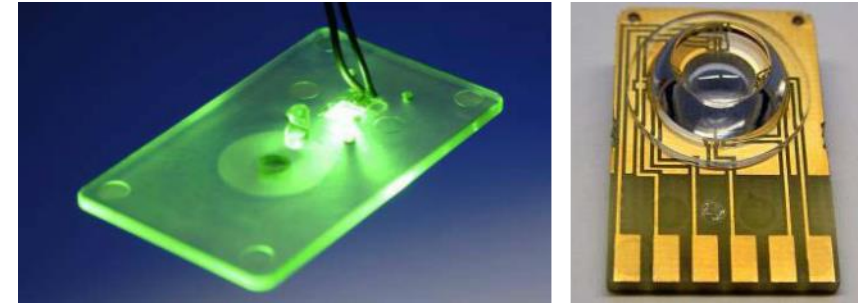
- Additional advantages of optically embedded electronics:
 - Improved optical path: efficiency
 - Reduced optomechanics: robustness
 - Reduced footprint: miniaturization
 - Design flexibility
 - Possibility of exploring new optical functions



MAIN TECH ENABLER: Direct IM overmoulding of polymer dioptrics on the electronics.

Is this new??

- Injection moulded optics exist
- Overmoulding on electronics too
- Interesting research available
- The next step is not so easy!



Examples from bibliography

High quality, pre-aligned freeform optics. CHALLENGES:

- Design of the mould shape for freeform optic.
- Obtain micro-resolution on the dioptric.
- Precise placement of the components. Heterogeneous integration, alignment
- Obtain the promised additional effects: diffractive optics, microprisms, etc...
- ... making it all industrial, robust, affordable and productive.
 - Development of mouldmaking technology, research materials and processes
 - In machine instrumentation, embedded intelligence for quality assurance.

Thanks for your attention



Consortium:



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