

## **PhD researcher on laser-induced forward transfer printing for micro-assembly of electronic and photonic components**

The final step in the fabrication of electronics is the assembly of multiple components into a highly integrated yet functional system. To complete this step in a fast and economical way, various techniques have been introduced to achieve heterogeneous integration, using different methods of collecting, handling, and releasing the structures.

The state-of-the-art serial pick-and-place micro-assembly techniques used today suffer from low throughput and high cost due to the need for handling and manipulating each component individually. The CMST research group at Ghent University is developing laser-induced forward transfer (LIFT) for massive transfer and assembly of very small components. LIFT transfers prefabricated micro- or nano-scale structures from donor substrates to functional receiving substrates, and as such allows the heterogeneous integration of different materials and structures on substrates that are very different from the ones on which the devices were initially realized. The process is very fast, ultimately limited by the pulse repetition rate of the laser, and the scanning mechanism to control the laser beam. Furthermore, the fact that LIFT is a contactless process opens up the route for the transfer of ultra-thin and small-size components, which cannot be handled mechanically.

During the PhD, you will develop the LIFT printing process for micro-assembly of a range of electronic and photonic components. You will investigate the laser material interaction responsible for the physical transfer of the component, build an experimental set-up to visualize the printing process, and set-up an appropriate model. Your process will be applied in the assembly of a wide range of micro-components.

Required background: electrical engineering, photonics, (applied) physics, nanotechnology

Type of work: 10% literature study, 10% modeling, 10% design, 40% processing, 20% characterization, 10% dissemination

Supervisor: Prof. Geert Van Steenberge

Daily advisors: dr. Tom Sterken

How to apply: send your motivation letter and curriculum vitae to [katrien.vanneste@ugent.be](mailto:katrien.vanneste@ugent.be) before June 15<sup>th</sup>.