



MICROPRINCE—Open Access Foundry Pilot Line for Elastomer Assisted Micro-Assembly

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Elastomer assisted Micro-Transfer-Printing (μ TP) is a demonstrated and versatile micro-assembly technology that has been developed in a laboratory and an industrial environment for over ten years. μ TP involves the release, transfer and printing of an array of devices from their growth substrate to a different non-native substrate in a massively parallel manner (i.e. thousands of devices per transfer) with a positioning tolerance less than 1.5 μ m, using an elastomeric stamp as the transfer element. X-Celeprint has demonstrated this technology in a wide range of diverse applications spanning from OLED and micro-LED displays to concentrated photovoltaics, sensors, storage and photonics [1, 2]. This technology provides an excellent solution to challenges involving the heterogeneous

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integration of III-V devices with silicon and other application specific substrates such as engineered substrates, flexible substrates, CMOS wafers and glass substrates. Despite the transformational potential of μ TP, no commercial facility is available to scale up the technology to an industrial production level in a microelectronics foundry environment. This paper will describe a European project, MICROPRINCE, that has the goal of setting up the worldwide first open access foundry pilot line for heterogeneous integration by μ TP and demonstrate its capability on five defined target applications. The project includes 13 European partners and will be led by X-FAB MEMS Foundry GmbH, who will set up the pilot line in its cleanroom facilities. The installed pilot and the developed processes will lead to the unique opportunity to transfer R&D results to commercial exploitation. Companies planning to use the technology will now be able to use a foundry to have their products fabricated. This key element is expected to spur rapid adaption of the technology. The successful implementation is expected to lead to a substantial and sustainable growth of micro-assembly related businesses.