

TIOM

Through-wafer connection for Integrated Optic devices for improved assembly and packaging to manufacture Microsystems

General

A major problem in the take-up of microsystems is the assembly and packaging strategy to be used. No standard methodologies exist for assembly and packaging for silicon based sensor/actuators, due to the incompatibility of the application of the sensor/actuator with standard IC applications. Separation of the electrical contacts and the active area of the device would enable the application of more conventional IC assembly and packaging technologies, reducing costs and increase reliability. The goal of this project is to combine integrated optics technology developed by LioniX with Hymite's technology, in order to create electrical contacts on the back-side of the integrated optics chip. The combination of these technologies will enable easy assembly, reduce costs, especially for multi-channel devices such as multispecies sensors as well as telecom components.

Objectives

The main objective of this project is to provide integrated optics technologies, with back-side contacts for easy assembly and packaging. In order to demonstrate the technology demonstrators will be made of an optical sensor (MZI: Mach-Zehnder Interferometer) and a telecom device (OADM: Optical Add/Drop Multiplexer).

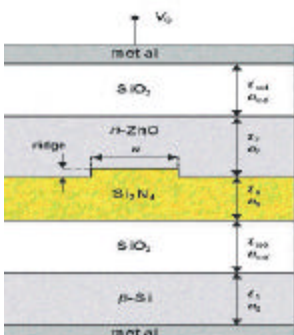
Once the technology has been proven successful, it is expected that it can also be widely used for other microsystems technologies.

Work description

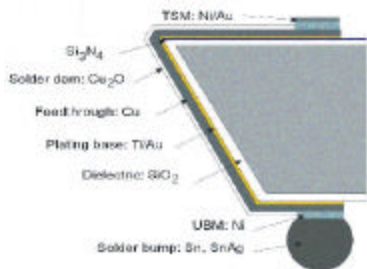
The integrated optics technology of LioniX has a large potential for sensors and telecom components. However, to optimally use the properties of this technology, adequate assembly and packaging schemes have to be available to ensure a quick up-take of the technology by the European industry. Recently, a method has been developed by Hymite to create feed-throughs in a silicon chip to enable back-side contacting. Combination of the above technologies would enable the end-users to get a more reliable microsystem for lower costs. In order to evaluate the potential of these technologies, test devices have to be made to adapt, fine-tune and integrate the available process schemes.

Deliverables

- An optical sensor system will be defined in close collaboration with the end-user and demonstrators will be realized;
- An optical add/drop multiplexer will be defined in close collaboration with the end-user and demonstrators will be realized;
- Dissemination and awareness raising of possibilities of the total technology solution for assembly and packaging of microsystems.



MZI



Through-wafer connection



OADM

