

CASE STUDY

PURELAB[®] Option guarantees pure water for leading microfluidics technology

Council for Scientific and Industrial
Research (CSIR), South Africa

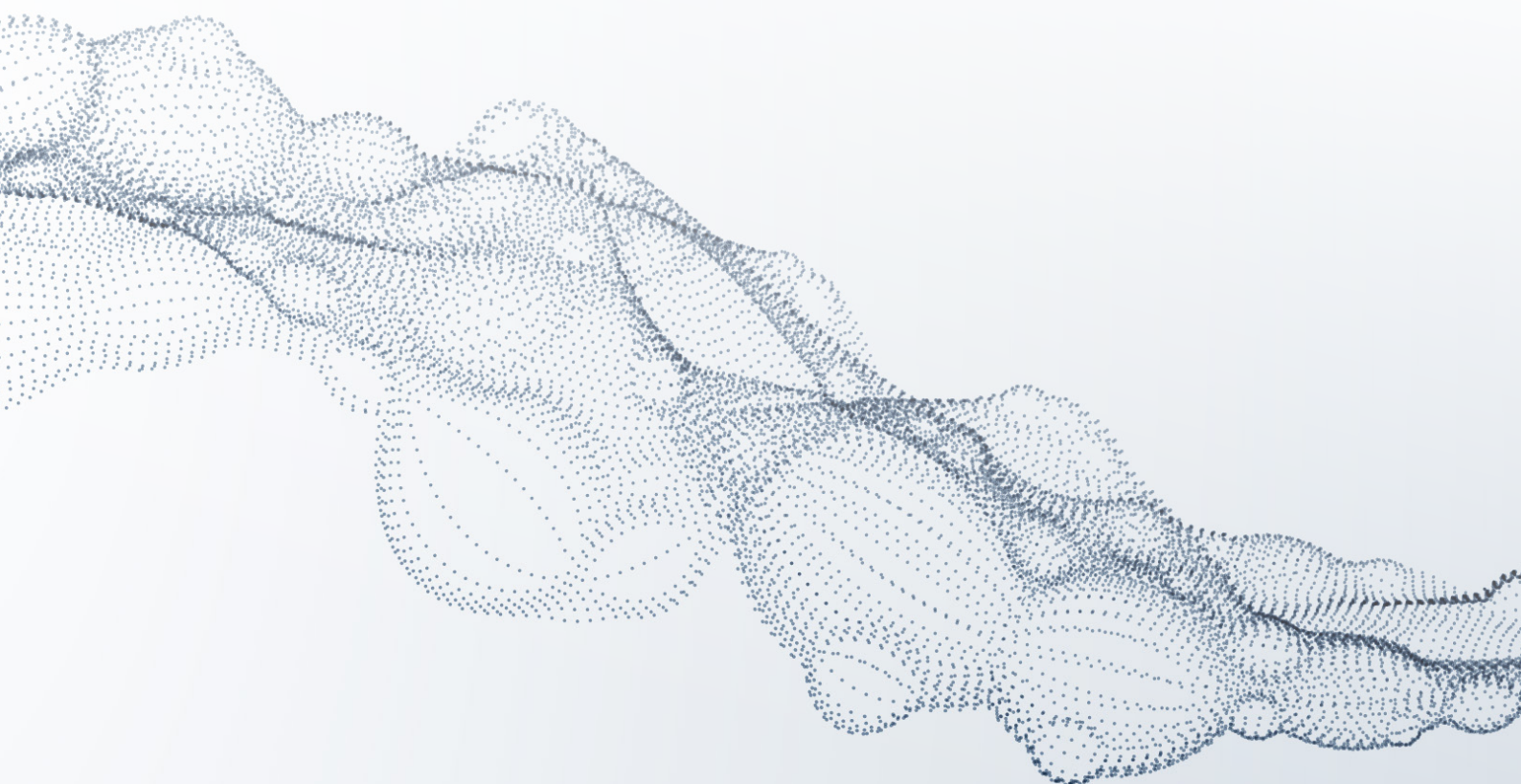
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Microfluidics studies how the behaviour of fluids at a microscale change, to enable control and manipulation of fluids in nano and picoliter ranges. Silicone wafers are used in this application to build moulds for use in the process and it is essential that they are cleaned with Type II water before use. ELGA were able to offer CSIR the PURELAB[®] Option, guaranteeing Type II water quality at all times.

The CSIR is one of the leading scientific and technology research, development and implementation organisations in Africa. Constituted by an Act of Parliament in 1945 as a science council, the CSIR undertakes directed and multidisciplinary research, technological innovation as well as industrial and scientific development to improve the quality of life of the country's people.

The Mechatronics and Micro Manufacturing (MMM) at the CSIR has taken the lead in developing a new technology; microfluidics, which deals with the behaviour, control and manipulation of fluids in nano and picolitre ranges.



CASE STUDY

Challenge & Solution

The Technology: Microfluidics

The goal of microfluidics is to automate standard lab processes and conduct chemical and biochemical processes in a miniaturised format on a chip.

Small quantities of reagent, less waste generation, faster reaction times and cost-efficiency are some obvious advantages, while the micron-sized particles can be manipulated with great precision for specific purposes.

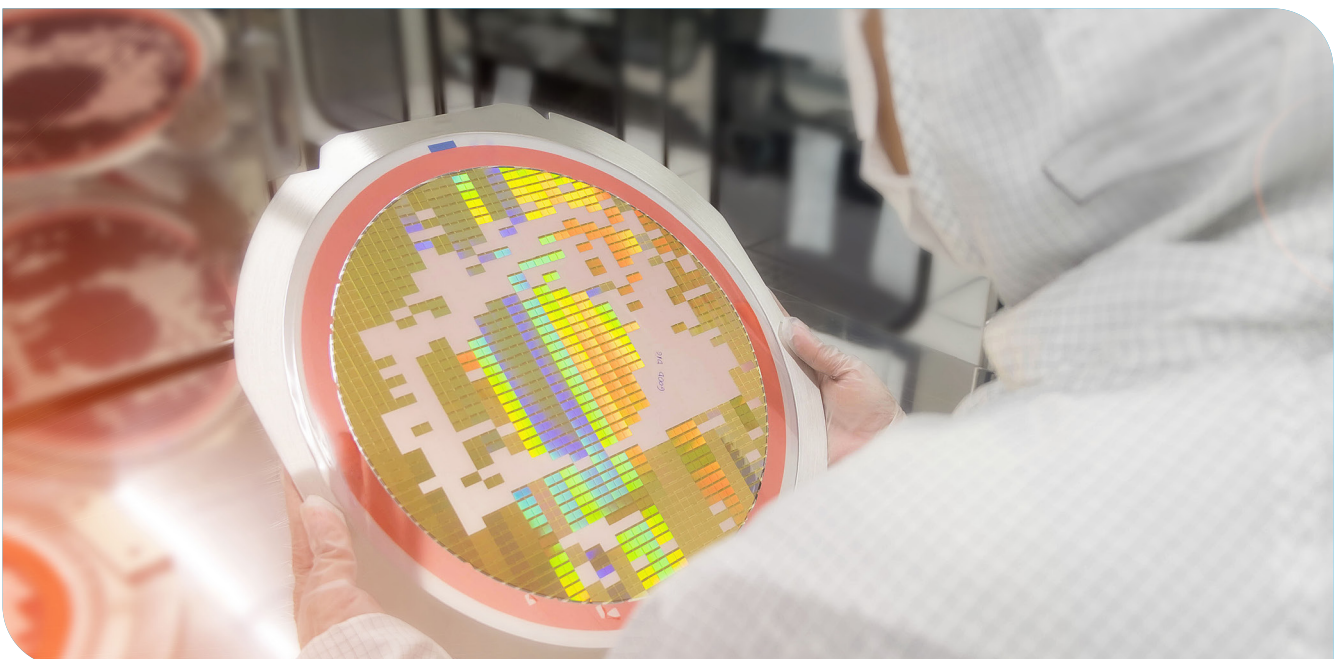
Microfluidics applications can be far reaching and stretches across areas such as disease detection, micro fuel cells, chemical and pharmaceutical production.

Water Requirements

Silicone wafers are used as a substrate to build moulds for the microfluidic channels.

A photoresist, SU-8, is spun onto the wafer, exposed to UV light, developed and baked to yield the required channel structure. These “wafer moulds” form an integral part of micromanufacturing.

Once developed, the wafer is washed with type II water provided by ELGA PURELAB Option R7 in the new cleanroom laboratory and then baked on a hotplate to evaporate any moisture. It was very important that the whole purification unit fitted neatly and cleanly in the dust-free area. The use of the wrap around reservoir (docking vessel) helped to save valuable laboratory space. In addition, the remote dispense gun allows easy access while working under a fume hood cabinet. Since the PURELAB Option is a fully recirculating Type II system, water quality is guaranteed at all times.



Dedicated to Discovery

info@elgalabwater.com/www.elgalabwater.com

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