Manufacturing microfluidic devices taps on the capabilities arising from multidisciplinary fields such as chemistry, physics, engineering, microtechnology and biotechnology. These devices consist of sub-millimetre sized channels that can be used to control the movement of nano, and even picolitre volumes of fluid. The applications of microfluidic devices are diverse, ranging from ink-jet printing to lab-on-chip and are widely used in biomedical research and diagnostics, chemical processing, water monitoring/processing, and alternative energy exploitation.

**Mission**
To develop, test and implement polymer manufacturing technologies for microfluidic applications to nurture and grow the microfluidics industry.

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**FROM DESIGN TO MANUFACTURING**

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**Core Competencies**

As a solution provider for microfluidics manufacturing, SIMTech Microfluidics Foundry offers:

- Design, prototyping, and production services of microfluidic devices
- Supply of polymer-based microfluidic devices to the industries
- Accessories and tools for microfluidics applications
- Development of microfluidics devices and systems for medical diagnostics and industry application

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**Target Industries**

- Biomedical Research
- Medical Diagnostics
- Chemical Processing

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**SIMTech for Industry**
Microfluidic Droplet Generator Meets Stringent International Standards of Healthcare and Pharmaceutical industry

When Austrianova, a life science and biotech company with a global footprint that encapsulates living cells in bio-inert polymers, was looking for a solution for Good Manufacturing Practice (GMP) compliant cell encapsulation process, microfluidics approaches were conceptualised and proposed. To alleviate the challenges, Austrianova engaged SIMTech to design and develop a customised high throughput droplet encapsulator using a single phase-flow microfluidic droplet generation technique developed and patented by SIMTech. The microfluidic droplet generator is not only contamination-free but also meets stringent international bio-manufacturing compliance.

“As a result of the collaboration, Austrianova has successfully used the new droplet generation systems in its manufacturing plant,”

Dr John Dangerfield, Chief Operating Officer, Austrianova Singapore

Technologies Available for Transfer

- Hot embossing system
- Fluid pumping and control system
- DNA auto extraction system
- Protein profiling system
- Droplet generator
- On-demand-droplet generator

Research Partners

- Genome Institute of Singapore (Singapore)
- Institute of Materials Research and Engineering (Singapore)
- Institute of Medical Biology (Singapore)
- Institute of Molecular and Cell Biology (Singapore)
- Nanyang Technological University (Singapore)
- National University of Singapore (Singapore)
- University of Cornell (USA)