



## GMP Compliant Microfluidic Droplet Generation System (S-Droplet SDG 2000)

Microdroplets have well defined shape, predetermined compositions. Their small size, low mass and potentially high-throughput formation are the enabling features for the bio-encapsulation and pharmaceutical industry applications. Conventional droplet generation systems suffer from tedious cleaning/sterilization process and longer change-over time. In those systems, the concern of contamination is extremely unacceptable when the produced droplets/beads are for biomedical usage.

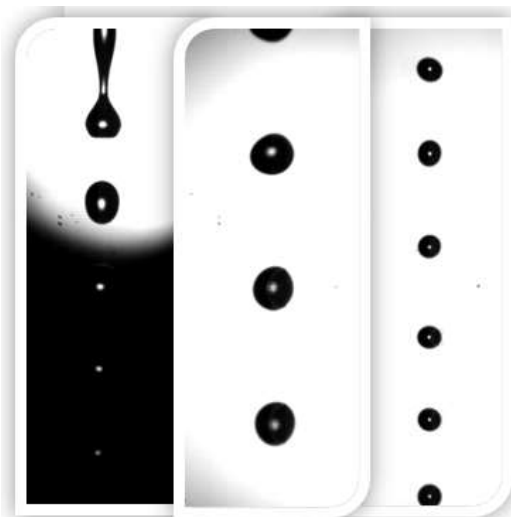
The microfluidic droplet generation system (S-Droplet SDG 2000) leverages the advantages of microfluidics to make a droplet generation device as a disposable chip. The low cost, disposable and contamination-free chips form the core of the system, and are made from plastic through an injection molding process. The system is able to generate highly uniform sized polymer droplets/microbeads for bio-encapsulation. The system was built following Good Manufacturing Practices (GMP) and European Pharmacopeia Standards (EUP).

### Product Features:

- System can be put and operated in Biosafety Cabinets;
- Droplet charging process utilized to prevent droplet coalescence;
- Stroboscopic lighting integrated to observe the stability of the droplet jet during operation;
- Fully computer controlled program;
- Integrated camera for real-time droplet observation;
- Process parameters printing at real time with optional Printer;

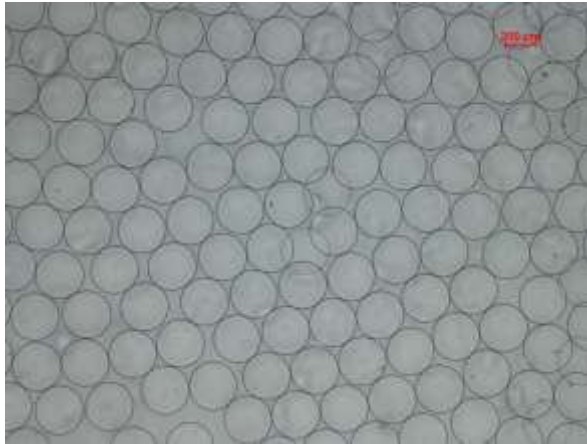


Droplet Generation System (SDG2000)



Snapshots of droplet formation





Alginate microbeads ( $\sim 250 \mu\text{m}$  in diameter) produced by the system

### Performance Benefits:

- Highly uniform microbeads can be produced for bio-encapsulation;
- Low cost, disposable and contamination-free (sterilized) polymer chips integrated on-chip for droplet generation;

### General Specifications

Overall	
Dimension (L × W × H)	$\sim 400 \text{ mm} \times 500 \text{ mm} \times 600 \text{ mm}$ (LxWxH)
Weight	$\sim 20 \text{ kg}$
Working Temperature	$\sim 25^\circ\text{C}$
Voltage	$\sim 110$ or $\sim 230 \text{ V}$ (50 – 60 Hz)
Power	$\sim 100 \text{ W}$
Hardware Interface and Setting	
Interface to Computer	USB
Syringe Size	20 ml (recommended)
Flow Rate	Up to 500 ml/hr (material dependent)
Droplet Formation	
Vibration Frequency	Up to 5 kHz
Charging voltage	Up to 2500 Volts
Available flow exit Diameter	70 $\mu\text{m}$ , 120 $\mu\text{m}$ , 170 $\mu\text{m}$ & 250 $\mu\text{m}$ ; Customized dimensions upon request
Stroboscopic lighting	Automatic synchronized with vibration frequency
Stirrer	Program controlled
High speed camera	Program controlled; Position adjustable;
Droplet diameter	100 - 800 $\mu\text{m}$ (material dependent)

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