

# Application Note



## Microfluidizer® Technology – How it works



### INTRODUCTION

Microfluidizer® processor technology leads the way with seamless scale up from the lab to production with unparalleled repeatability.

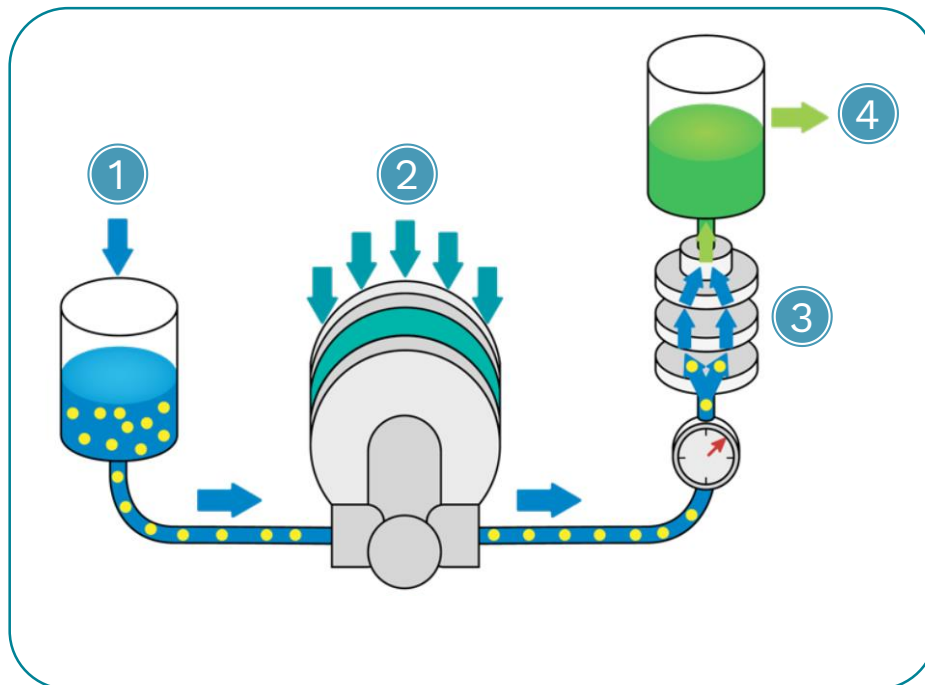
This is due to the way in which it works consistently for each and every processed batch.

## Microfluidizer® Technology – How it works

### HOW IT WORKS

#### Microfluidizer® processor

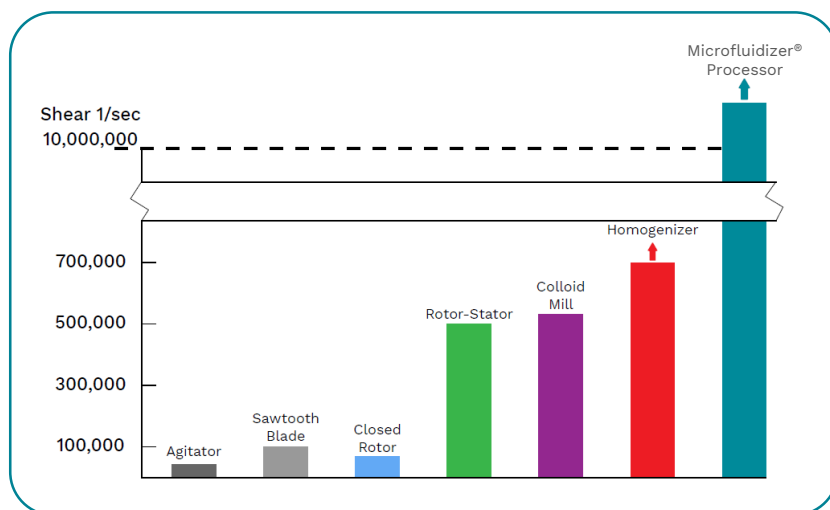
- ① The sample is first poured into the inlet reservoir.
  - ② The Microfluidizer® Processor constant pressure pump forces the liquid through the Interaction Chamber™ microchannel where it is subjected to high impact and shear forces that result in the particle size reduction.
  - ③ Operating pressures begin at 500 psi and go up to 30,000 psi. The pressure applied depends on the application.
  - ④ The material is passed on through the heat exchanger or cooling device to the final reservoir, where the processed material is then collected.
- Control of the particle size is achieved by adjusting the following variables:
- Interaction Chamber™ size
  - Type of Interaction Chamber™
  - Process pressure
  - Number of passes
  - Inlet/outlet temperature



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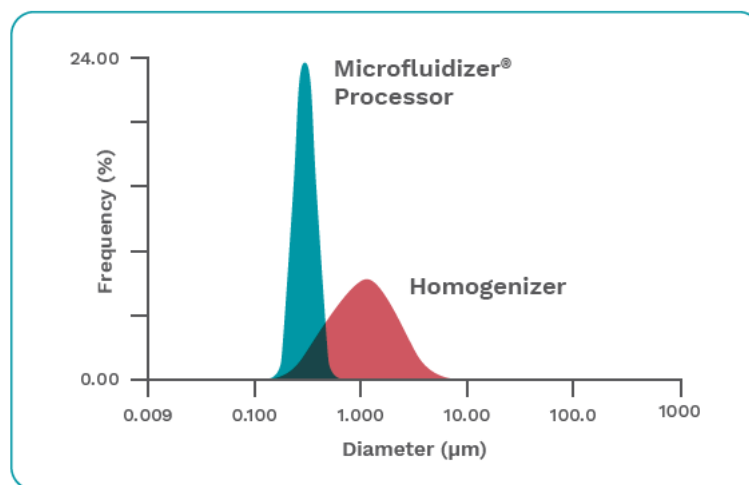
### HIGHEST SHEAR RATES

The key factor in creating nanoemulsions, cell disruption or in particle size reduction is the shear rate. Chart 1 compares the shear rates of various technologies. The Microfluidizer® Processor offers the highest shear rate available.



### UNIFORM PARTICLE SIZE DISTRIBUTION

A crucial factor in producing nanoparticles is achieving a uniform particle size distribution during the process. Microfluidizer® technology has proven itself with thousands of users over the decades to produce the narrowest of distributions.



## Microfluidizer® Technology – How it works

### A MODEL TO SUIT YOUR NEEDS

The models differ only in the batch sizes they can produce – all processing conditions remain the same from lab to production scale processing.

#### Lab and Benchtop equipment



#### LM10

Digitally controlled pneumatic lab unit for small sample material processing



#### LM20

Digitally controlled electric powered lab unit for small sample processing



#### M110P

cGMP  
Compliant

The flagship plug & play laboratory unit with cGMP-compliance capability

#### Pilot and Production scale equipment



#### M110EH

cGMP  
Compliant

Available in basic, enhanced and aseptic biopharma models for various applications



#### M815

cGMP  
Compliant

For processing pilot-scale and small production batches



#### M700

cGMP  
Compliant

Customizable M700 Series Microfluidizer® processors for robust manufacturing of production batches