A Microfluidics Device for Production of Stabilized Microbubbles for Ultrasound Imaging

Euler Santi, Tianheng Liang, Advisor: Dr. Wheatley

Medical Need

Current method is inefficient:

Surfactant Usage: 10-20% Polidispersty Index: 85%

Requirements: Reproduce and Improve Efficiency

Size <6µm, Half-life ≥5 minutes, Echogenicity ≥15dB

Approach

Math Moduling

PBS

SF6 Gas

Square capillary

Micropipettes

Mixed Surfactant

Result & Impact

Microbubbles produced but were verified failed to control required size and amount of gas contained due to the flowing limit

Expect Impact:

Provide a higher resolution benefit in ultrasound imaging
Contribute to future drug delivery using contrast agent