

Electronic Supplementary Information (ESI) for:

**Microfluidic System for High Throughput Characterisation of
Echogenic Particles**

Paul Rademeyer^a, Dario Carugo^a, Jeong Yu Lee^a, Eleanor Stride^{a}*

^a Institute of Biomedical Engineering, University of Oxford, Old Road Campus Research Building, Oxford OX3 7DQ, UK

S1 Construction of the model geometry

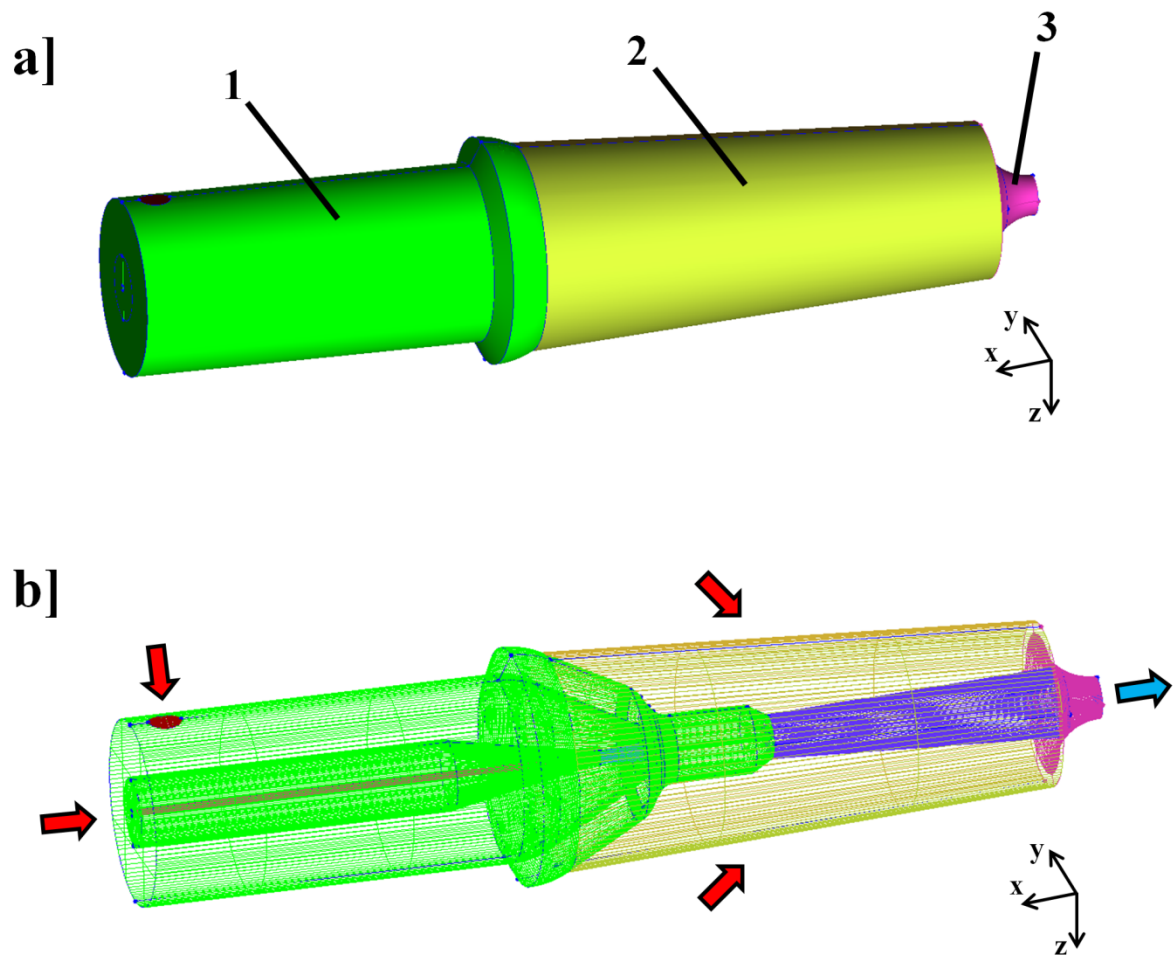


Figure S1: (a) Schematic representation of the computational model geometry (with surface rendering). The three main components of the model can be appreciated, including (1) the microfluidic flow focussing device (green), (2) the truncated cone joining the microfluidic device with the suction element (yellow), and (3) the suction element (violet). The inner surfaces generated for meshing purposes can be appreciated in (b). Red and blue arrows in (b) correspond to mass flow inlet and outflow boundary conditions, respectively.

S2 Preparation of acoustic vapour droplet

Methoxy polyethylene glycol-N-hydroxysuccinimide dissolved in dichloromethane was added to a human serum albumin solution, and then sonicated for 30 sec. The prepared oil-in-water emulsion was transferred to a rotary evaporator, and then perfluoropentane (PFP) was added to the evaporated solution. The solution was purified using a filter membrane.

S3 Example of image of ink confinement

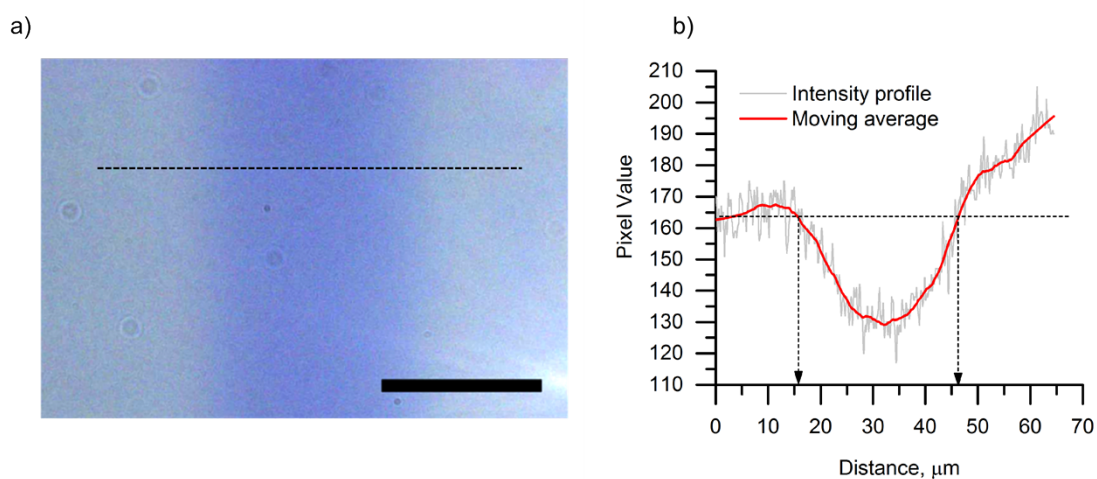


Figure S3: a) Example of an image captured during the measurement of ink confinement 6 mm downstream from exit of microfluidic device and b) the corresponding intensity profile used to estimate the confinement diameter defined by a manually set threshold as indicated by the horizontal dotted line. Here the sheath and particle flow rates were set at 5 ml/min and 30 μ l/min respectively. Scale bar represents 20 μ m.

S4 Velocity field simulations

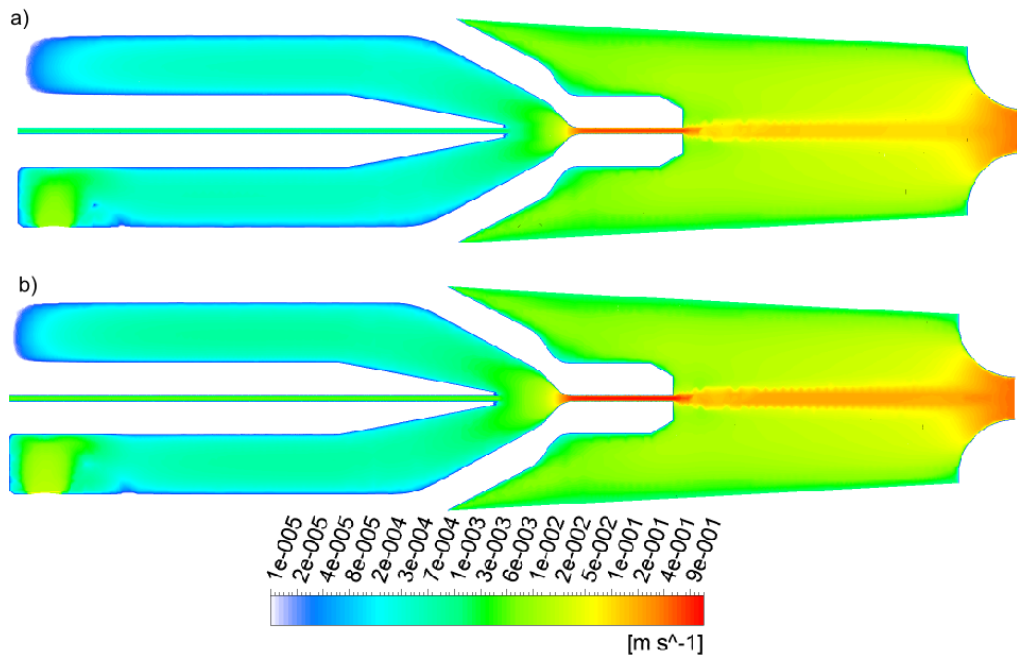


Figure S4: Contours of fluid velocity magnitude in the microfluidic device at the centre plane on XZ axis for particle and sheath flow rates of a) 3 ml/min and 10 µl/min, b) 5ml/min and 30 µl/min, respectively. The logarithmic colour scale represents the fluid velocity magnitude.