Acoustofluidic Particle Trapping, Manipulation, and Release using Dynamic-mode

Cantilever Sensors

[Supplementary Information]

Blake N. Johnson [a] * and Raj Mutharasan [b]

[a] Department of Industrial and Systems Engineering, Virginia Tech, Blacksburg, VA 24061

[b] Department of Chemical and Biological Engineering, Drexel University, Philadelphia, PA 19104

Key words: acoustic streaming, particle manipulation, particle trapping, flow focusing, particle separation

*Corresponding author

Tel.: (540) 231-0755. Fax: (540) 231-3322

Email: bnj@vt.edu

Supplementary Information

These supplementary materials contain videos of 100 μm diameter particle trapping in the fundamental (n = 1) and second modes (n = 2) (Movies S1 and S2, respectively), particle manipulation via switching to the second mode after trapping particles in the fundamental mode (Movie S3), particle manipulation via switching to the 227 kHz mode after manipulating particles with switching to the second mode (Movie S4), and release of trapped particles by switching to a noise signal after trapping particles in the fundamental mode (Movie S5).

Associated video file names are:

Movie S1 – First Mode Particle Trapping -Voltage On (10 V)-16x speed

Movie S2 – Second Mode Particle Trapping -Voltage On (10 V)-16x speed

Movie S3 – Particle Manipulation via Switching from First to Second Mode at t~10 s

Movie S4 – Particle Manipulation via Switching from Second to 227 kHz Mode at t~10 s

Movie S5 – Particle Release via Switching from First Mode to Noise Waveform at t~10 s