

Electronic Supplementary Material (ESI) for Lab on a Chip  
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## ELECTRONIC SUPPLEMENTARY INFORMATION

**Manuscript ID:**

**Title: Microfluidic acoustophoretic force based low concentration oil separation and detection from environment**

**Han Wang,<sup>a</sup> Zhongzheng Liu,<sup>b</sup> Sungman Kim,<sup>a</sup> Chiwan Koo,<sup>c</sup> Younghak Cho,<sup>d</sup> Dong-Young Jang,<sup>e</sup> Yong-Joe Kim,<sup>b</sup> and Arum Han<sup>\*a,c</sup>**

<sup>a</sup>Department of Electrical and Computer Engineering, Texas A&M University, College Station, TX, USA

<sup>b</sup>Department of Mechanical Engineering, Texas A&M University, College Station, TX, USA

<sup>c</sup>Department of Biomedical Engineering, Texas A&M University, College Station, TX, USA

<sup>d</sup>Department of Mechanical System Design Engineering, Seoul National University of Science and Technology, Seoul, Republic of Korea

<sup>e</sup>MSDE (Manufacturing Systems and Design Engineering) Program, Seoul National University of Science and Technology, Seoul, Republic of Korea

\* Arum Han, tel: 01-979-845-9686; [arum.han@ece.tamu.edu](mailto:arum.han@ece.tamu.edu)

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**Supplementary Video 1.** Video clip showing single oil droplets with 62  $\mu\text{m}$  diameter passing by (without actuation) and being trapped (with actuation) in the circular chamber.

**Supplementary Video 2.** Video clip showing single oil droplets with 14  $\mu\text{m}$  diameter passing by (without actuation) and being trapped (with actuation) in the circular chamber.

**Supplementary Video 3.** Fluorescent microscopy video clips showing oil droplets being trapped and accumulated in the circular trapping chamber.

**Supplementary Video 4.** Brightfield microscopy video clips showing oil droplets being trapped and accumulated in the circular chamber, released after detection, and separated into collection outlet for off-chip analyses.

**Supplementary Video 5.** Brightfield and fluorescence microscopy video clips showing oil droplets mixtures of poly-dispersed sizes being trapped and accumulated in the circular chamber, and released after detection.