

Abstract Submitted
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High-speed microfluidic differential manometer for cellular-scale hydrodynamics MAGALIE FAIVRE, MANOUK ABKARIAN, HOWARD STONE, Harvard University — We propose a broadly applicable high-speed microfluidic approach for measuring dynamical pressure drop variations along a micron size channel and illustrate the technique by presenting the first measurements of the additional pressure drop produced at the scale of individual flowing cells. The influence of drug-modified mechanical properties of the cell membrane is shown. Finally, single hemolysis events during flow are recorded simultaneously with the critical pressure drop for the rupture of the membrane. This scale-independent measurement approach can be applied to any dynamical process or event that changes the hydrodynamic resistance of micro- or nanochannels.

Howard Stone
Harvard University

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