

Abstract Submitted  
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**Drop break-up and pressure measurements in a microfluidic device**<sup>1</sup> SUZIE PROTIERE, HOWARD A. STONE, SEAS, Harvard University, DAVID A. WEITZ, Dept of Physics and SEAS, Harvard University — We study experimentally the flow of an emulsion passing through one or a few constrictions placed in a microfluidic channel. Using a high-speed differential manometer placed in the same device (M. Abkarian et al. PNAS 200:16407104 (2006)) we have measured the dynamic pressure as a drop breaks up when it meets one or several constrictions. We can then study how a global measurement of the pressure drop indicates the sequence of phenomena occurring in the channel (breakup, trapped and squeezed drops etc.). In a separate set of experiments with a microfluidic model of a two-dimensional porous medium through which drops flow we can observe the various phenomena and thus correlate the pressure fluctuations to single events at the pore scale.

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