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**Localized laser forcing for breaking, sorting or blocking droplets in a microchannel** CHARLES BAROUD, LadHyX, Ecole Polytechnique, Palaiseau, France, JEAN-PIERRE DELVILLE, CPMOH, Universite de Bordeaux I, Talence, France — Heat from a laser beam focused at the interface between two immiscible fluids is used to produce thermocapillary stresses along this interface. When combined with the device geometry, these stresses allow us to act on individual droplets as they are transported by a carrier fluid. We demonstrate the application of this technique to perform a wide range of basic operations such as determining the size of a droplet upon breakup, sorting droplets or breaking them into calibrated sizes. These fundamental building blocks may then be combined to develop a contactless, scalable, method for droplet microfluidics within the microchannel environment.

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