

Abstract Submitted  
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**Confined Selective Withdrawal** ALVARO EVANGELIO, FRANCISCO CAMPO-CORTES, JOSE MANUEL GORDILLO, Universidad de Sevilla — It is well known that the controlled production of monodisperse simple and composite emulsions possesses uncountable applications in medicine, pharmacy, materials science and industry. Here we present both experiments and slender-body theory regarding the generation of simple emulsions using a configuration that we have called Confined Selective Withdrawal, since it is an improved configuration of the classical Selective Withdrawal. We consider two different situations, namely, the cases when the outer flow Reynolds number is high and low, respectively. Several geometrical configurations and a wide range of viscosity ratios are analyzed so that the physics behind the phenomenon can be fully understood. In addition, we present both experiments and theory regarding the generation of composite emulsions. This phenomenon is only feasible when the outer flow Reynolds number is low enough. In this case, we propose a more complex theory which requires the simultaneous resolution of two interfaces in order to predict the shape of the jet and the sizes of the drops formed. The excellent agreement between our slender-body approximation and the experimental evidence fully validates our theories.

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