Abstract Submitted
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**Studies of Interfacial Perturbations in Two Phase Oil-Water Pipe Flows Induced by a Transverse Cylinder**[1] MAXIME CHINAUD, KYEONG PARK, Department of Chemical Engineering, University College London, JAMES PERCIVAL, Department of Earth Science and Engineering, Imperial College London, OMAR MATAR, Department of Chemical Engineering, University College London, CHRISTOPHER PAIN, Department of Earth Science and Engineering, Imperial College London, PANAGIOTA ANGELI, Department of Chemical Engineering, University College London — Droplet detachment from interfacial waves has been the subject of many studies. To observe this phenomenon experimentally it is necessary to spatially localize the drop formation and enable quantitative measurements. In this study, a novel approach is followed where a transverse cylinder is introduced close to the mixing point of the two phases in oil-water flows which induces waves. The introduction of the cylinder induces interfacial waves that lead to drop detachment. High speed visualization has been used to generate flow pattern maps with this new system. The dispersed patterns induced by the cylinder will be linked to pressure drop measurements. The interface downstream the cylinder is affected by three different contributions: the vortices shed by the cylinder, the wall effects due to the pipe itself and the interface fluctuations due to the mixing of the two phases. These contributions will be quantified through a numerical study. A mesh adaptive multiphase finite element Navier Stokes solver, Fluidity, will be used to obtain flow pattern maps for 2D channel flow. The numerical findings will be compared against the experimental results.

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