

Abstract Submitted
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Hydrodynamic and macromolecules induced clusters of red blood cells in microcapillary flow VIVIANA CLAVEIRA, OTHMANE AOUANE, Saarland University, GWENNOU COUPIER, CHAOUQI MISBAH, University Grenoble Alpes, MANOUK ABKARIAN, University Montpellier 2, CHRISTIAN WAGNER, Saarland University — Recent studies have been shown that despite the large shear rates, the presence of either fibrinogen or the synthetic polymer dextran leads to an enhanced formation of robust clusters of RBC in microcapillaries under flow conditions. The contribution of hydrodynamic interactions and interactions induced by the presence of macromolecules in the cluster formation has not been established. In order to elucidate this mechanism, we compare experimentally in microchannels under flow condition, the pure hydrodynamic cluster formation of RBCs and the cluster formation of RBCs in the presence of macromolecules inducing aggregation. The results reveal strong differences in the cluster morphology. Emphasizing on the case of clusters formed by two cells, the surface to surface interdistances between the cells in the different solutions shows a bimodal distribution. Numerical simulations based on the boundary integral method showed a good agreement with the experimental findings.

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