

254c Cell Depletion in Synthetic Micro-Thrombosis: on the Enhanced FåHraeus Effect

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It is well known that when a suspension of cells flows in a small capillary there exists a cell-free layer adjacent to the walls. We show experimentally that a constriction in the flow can dramatically enhance the cell-free layer downstream. The effects of the constriction geometry, flow rate, suspending fluid viscosity, cell concentration, and cell deformability are studied and the results are interpreted in terms of a model of the hydrodynamic drift of a cell in a quadratic flow. As our observations indicate that the constriction causes dramatic modifications of the cell distribution, the results may have major implications for shear stress-triggered mechanotransduction, oxygen transport, and wound healing downstream of remodeled arteries.