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Non-homogeneous concentration of suspensions in micro-capillary networks: particles in a bifurcation THOMAS PODGORSKI, CNRS-UJF Grenoble, VINCENT DOYEUX, UJF Grenoble, SARAH PEONAS, Université de Picardie, MOURAD ISMAIL, UJF Grenoble, GWENNOU COUPIER, CNRS-UJF Grenoble — We investigate the distribution of particles in flows of dilute suspensions in bifurcating channels. In studies relevant to blood flow in the microcirculation, an increase of the volume fraction of particles (hematocrit) in the high flow rate branch is usually observed, leading to non-uniform concentrations in a network of channels, with possible consequences on oxygen transport and pressure distribution. In the literature, this phenomenon is often wrongly interpreted as the result of some attraction of the particles towards this high flow rate branch. We show thanks to experiments and numerical simulations that the concentration phenomenon, often referred to as Zweifach-Fung effect, is mainly due to the non-homogeneous spatial distribution of particles in the mother branch, while a weak attraction towards the low flow rate branch occurs in the bifurcation.

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