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Dynamic Blocking at the Flow of Invert Water–Oil Emulsions

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Experimental investigations were done with the multiphase systems – highly concentrated invert water-in-oil emulsions, stabilized by the emulsifier Neftenol and without it. Flow in the channels – in the cell of Hele-Show or in the capillary structure results in the considerable transformation of emulsion without Neftenol – major re-structuring. Flow rate of the emulsion was measured using the electronic scales HM-200, visual picture of flow was recorded using the digital camera. According to data from the scales full blocking at constant pressure drop, a surprising effect for the disperse liquid-in-liquid system, with careful study using the microscope showed presence of small flow of the fluid, which size is four orders less than initial. As the microflow of the emulsion is always present, we will call this effect effect of dynamic blocking. In the axisymmetrical flow the effect is also present, but in this case hydrodynamic flow turns into very slow creeping motion in the capillary.

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