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Complex Flow Dynamics at Microscale

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Message from the Guest Editors

Microfluidics deals with fluid flows confined in channels with a characteristic length scale of the order of hundreds of microns at most. Therefore, at microscale, most of the flows are intrinsically laminar, with low numerical values of Reynolds. This may wrongly be assumed to be synonymous to simple and predictable flow dynamics. Nevertheless, under severe confinement conditions, a wide variety of scientific problems emerge, leading to challenging problems that make this topic worthy of being the focus of this Special Issue. Among a plethora of very interesting problems, we would like to highlight the following ones:

Micromixing: At low Reynolds numbers, two streams of fluids will flow parallel to each other and will not mix, simply because laminar diffusion dominates the flow. This has led to extensive studies with different approaches (active and passive micromixers) aiming at increasing mixing efficiency.

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Message from the Editor-in-Chief

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