Special Issue

Complex Flow Dynamics at Microscale

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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Materials (ISSN 1996-1944) was launched in 2008. The journal covers twenty-five comprehensive topics: biomaterials, energy materials, advanced composites, advanced materials characterization, porous materials, manufacturing processes and systems, advanced nanomaterials and nanotechnology, smart materials, thin films and interfaces, catalytic materials, carbon materials, materials chemistry, materials physics, optics and photonics, corrosion, construction and building materials, materials simulation and design, electronic materials, advanced and functional ceramics and glasses, metals and alloys, soft matter, polymeric materials, quantum materials, mechanics of materials, green materials, general. *Materials* provides a unique opportunity to contribute high quality articles and to take advantage of its large readership.

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