Special Issue

Lipid Bilayers on Chip

Message from the Guest Editor

Lipid bilayers are one of the fundamental models of biological membranes. Over the past 15 years, microfluidics and MEMS technologies have been exploited for precise manipulation of the lipid materials and made great contributions to produce planar and vesicular forms of lipid membranes in a controlled and reproducible manner; for example, planar lipid bilayers were suspended at a micrometer-sized aperture fabricated by a photolithography process, supported lipid bilayers were formed on a surface-modified microfluidic channels, and lipid vesicles were produced by traversing droplets from oil to an aqueous phase. This advancement in planar membranes and vesicles has further extended their research fields in exploration of the fundamental properties of cell membranes, creation of bottom–up synthetic cells, development of a drug screening system for cell membranes, and integration of membrane receptors for chemical sensors.

Guest Editor

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Deadline for manuscript submissions

closed (15 November 2020)

Micromachines

an Open Access Journal by MDPI

Impact Factor 3.0
CiteScore 6.0
Indexed in PubMed

mdpi.com/si/36523

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