

44、李战华（中科院力学所）——微纳复合管道流场特征分析

由于浓度极化等因素造成微纳复合管道结合部流场具有电渗流和压力流综合作用特点。根据流场观测，本报告将分析浓度扩散和富集发生的位置与过程，及纳微米通道尺度与富集效率的关系。

45、胡国庆（中科院力学所）——复杂微通道中的液滴控制

The problem of controlling the droplet motions in multiphase flows on the microscale has gained increasing attention. It is critical to understand the relevant physics on droplet hydrodynamics and thus control the generation, motion, splitting, and coalescence of droplets in complex microfluidic networks. The operation of those applications sometimes requires the arrival of droplets from different branch microchannels at a designated location within a transit time. We propose a simple design for interconnected microfluidic devices that implement the feedback mechanism to synchronize the droplet motion via a passive way. Numerical simulations using the Volume of Fluid (VOF) algorithm are conducted to investigate the time-dependent dynamics of droplets in both gas-liquid and liquid-liquid systems. An analytical mode based on the electronic-hydraulic analogy is also developed to describe the transit behavior of the droplet traffic. Both the numerical and theoretical results agree well with the corresponding experimental results.