



演題：Capillarity revisited

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要旨：

Capillarity or capillary effect is the phenomenon that liquid spontaneously flows in a narrow space without the assistance of external forces. It is frequently observed in nature and life, and occurs due to intermolecular forces between the liquid and surrounding solid surfaces (liquid-solid tension), and those between the liquid and air (liquid-gas tension). The competition between cohesion within the liquid and adhesion between the liquid and wall acts to propel the liquid. Although capillarity has been extensively studied since the early 19th century, it is very much alive fundamentally in nanoscale phenomena and technologies. In this talk, first, the criterion for capillary imbibition to take place is examined based on free energy minimization (thermodynamics). The edge effect which resists wetting is introduced as well. Then, capillary flow in open channels is investigated and compared to well-known Washburn's equation (transport phenomena). Finally, the question whether capillary flow can pass over a hole or not is explored from simulations.

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