

Interfacial fluid mechanics: a mathematical modeling approach

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Abstrak

Interfacial fluid mechanics: a mathematical modeling approach provides an introduction to mathematical models of viscous flow used in rapidly developing fields of microfluidics and microscale heat transfer. The basic physical effects are first introduced in the context of simple configurations and their relative importance in typical microscale applications is discussed. Then, several configurations of importance to microfluidics, most notably thin films/droplets on substrates and confined bubbles, are discussed in detail. Topics from current research on electrokinetic phenomena, liquid flow near structured solid surfaces, evaporation/condensation, and surfactant phenomena are discussed in the later chapters.