

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Capillary rise in a tilted Taylor-Hauksbee cell ABRAHAM MEDINA, SEPI, ESIME AZCAPOTZALCO IPN and ABACUS Departamento de Matematicas, Cinvestav, IPN, JAIME KLAPP, Instituto Nacional de Investigaciones Nucleares and ABACUS Departamento de Matematicas, Cinvestav, IPN, AYAX HERNANDO TORRES VICTORIA, Universidad Politecnica del Valle de Mexico, SALOMON PERALTA LOPEZ, Inst Mexicano del Petroleo, AYDET JARA HERNANDEZ, SEPI ESIME Azcapotzalco, IPN — The penetration of a wetting liquid in the narrow gap between two tilted plates making a small angle among them is analyzed in the framework of the lubrication approximation. At the beginning of the process, the liquid rises independently at different distances from the line of intersection of the plates. The maximum height of the liquid initially increases as a power law of time, where the exponent is dependent on the angle of inclination of the plates and is attained at a point that reaches the line of intersection only after a certain time. At later times, the motion of the liquid is confined to a thin layer around the line of intersection whose height increases again as a power law of time and the exponent of the power law is a function of the angle of inclination. The thickness of the film decreases as the inverse of the power law of time. The evolution of the liquid surface is computed numerically and compared with the results of simple experiments.

Salomon Peralta
Inst Mexicano del Petroleo

Date submitted: 31 Jul 2015

Electronic form version 1.4