

Measurement of Dynamic Contact Angles in Microgravity

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Abstract

When the Concus-Finn condition is fitted, there will be no equilibrium configuration in the interior corner under microgravity, and the fluid will move to the walls and can rise arbitrarily high along a part of the wall. In this study, we utilize the climb of the liquid in interior corner when the Concus-Finn condition is fitted to study the dynamic contact angle under microgravity condition in drop tower. The advancing of the fluid along the edge and the receding of the fluid along the bottom side are recorded by CCD camera. The dynamic contact angle and related velocity can be obtained by analysis. This method overcomes the difficulties in controlling the velocity of the contact lines in the small time duration of microgravity condition in drop tower. And the dynamic contact angles for different velocities of silicone oil on PMMA are measured in drop tower experiments.