

Nucleation and Bubble Growth in Single Phase Petroleum Fluids

Matthew Sullivan^{C,S} and Christopher Harrison
Schlumberger-Doll Research, Cambridge, MA, U.S.A.
msullivan2@slb.com

The nucleation barrier is a significant impediment to accurate measurement of saturation pressure in petroleum fluids. We study the limits and mechanisms of nucleation in petroleum systems to understand the applicability of these methods for rapid measurement. We demonstrate the necessity of active nucleation in these systems, particularly at temperatures well below the critical temperature. Additionally, we study the growth and dissolution dynamics of a second phase, once nucleated, near the bubble point.