527c An Investigation of the Spreading Dynamics of Sessile Drops of Polymer Blends

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The wetting behavior of multi-component systems is important in many applications such as coating deposition, adhesive spreading, printing, and lubrication. Much effort has been devoted and progress achieved in studying the wetting behavior of single-component liquids [1]. However, most studies of two-component drops have been limited to equilibrium effects and have not addressed the spreading dynamics [2-4]. Here we will present an experimental study of the wetting behavior of blends of different polyglycols. Sessile drops were formed by injecting the liquid through a hole in a silicon wafer. The silicon is coated with a silane monolayer to achieve different wetting behavior by altering the surface energy. The advancing contact angle and radius of the drop base were monitored as the drop relaxes toward its equilibrium contact angle. Results can be well described by a combined model proposed by de Ruijter et al.[5], where short time effects are dominated by friction at the advancing contact line and long time effects are dominated by viscous dissipation in the drop.

Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company for the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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