

355d Spreading and Two-Dimensional Mobility of Long-Chain Alkanes at Solid/Gas Interfaces

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Close to the bulk melting temperature, partially wetting alkane droplets (C₃₀H₆₂ and C₃₆H₇₄) are surrounded by circular solid mono- and multilayer terraces. The growth (shrinking) of these terraces is supplied (drained) by a molecularly thin wetting film of mobile alkanes on top of the terraces. At undercooling, alkanes move from the droplet perimeter to the solidifying terrace edge. At overheating the flux is reversed. The growth/receding kinetics is limited by the diffusive-like transport properties of the film. The direction and strength of the flux is given by the chemical potential gradient between droplet perimeter and terrace edge. It is linearly proportional to the temperature. Besides recently published results (PHYSICAL REVIEW LETTERS 94 (11): Art. No. 116101 MAR 25 2005) new findings on alkane mixtures will be presented and analyzed. In this case the chemical potential gradient between terrace edge and droplet perimeter is also affected by the (time-dependent) local alkane concentrations.