

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Origin of surface ordered phase in poly(n-alkyl acrylates) above the bulk melting temperature (T_m) SHISHIR PRASAD, LAURIE HANNE, ALI DHINOJWALA, The University of Akron — We present the first surface tension (γ) measurements as a function of temperature above T_m for poly(n-alkyl acrylates) to explain the presence of surface ordered phase. The surface tension increases with increase in temperature indicating that the surface molecules have lower entropy than in the bulk. There is an abrupt change in slope of γ vs T at T_{s2} ($>T_m$) indicating a first order surface transition. The temperature range of the ordered phase is much larger than that observed for small molecule alkanes and alcohols. We determine that this is primarily due to partial crystallinity within the side chains. The consequences of these results have important implications in similar systems containing chemically attached hydrophobic side chains such as surfactants, dendrimers and biomolecules.

Ali Dhinojwala
The University of Akron

Date submitted: 01 Dec 2004

Electronic form version 1.4