

Accessory Materials

Hydrogen-Bonded Macrocluster Formation of 1-Propanol and 2-Propanol on Silica Surfaces in Cyclohexane

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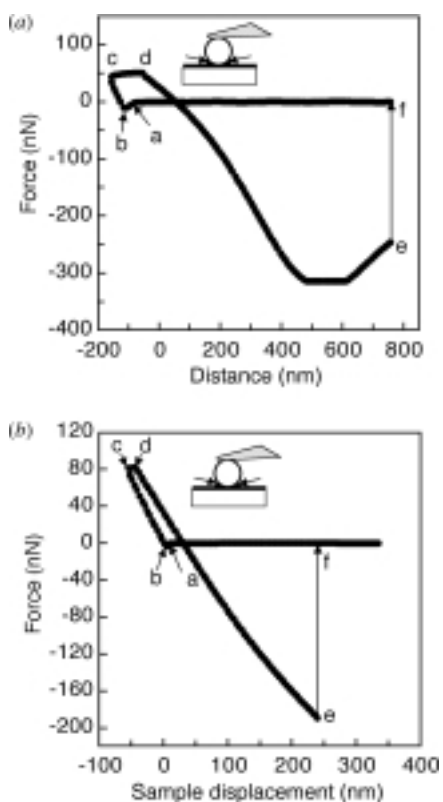


Fig. 1. The force profiles during one cycle of the measurement in (a) 0.1 mol-% 1-propanol and (b) 1.0 mol-% 2-propanol in cyclohexane: Attraction appeared at **a**, and changed to repulsion at **b** upon compression. The profile **c–d** shows that the cantilever remained at the same position although the glass plate retreated, the distance **c–d** was longer for 1-propanol (ca. 100 nm) than 2-propanol (ca. 20 nm). The profile **e–f** indicates the jump-out separation of two surfaces. The insert shows a plausible scheme of liquid influx into the gap during the process **c–d**. Usually, a hysteresis in the full AFM trace is caused by the nonlinearity/hysteresis of the piezo or the cantilever twisting/buckling. If the hysteresis was caused by the piezo-movement, it should not change depending on the concentration and kinds of alcohols. However, it depended on the kinds of alcohols as well as their concentrations. Thus, the nonlinearity or hysteresis of the piezo cannot cause the traces shown in this Figure.