Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Asymptotic Linear Scaling of Adsorption Induced Stress[1] RAJ GANESH PALA, FENG LIU, Univesity of utah — We illustrate there exists an asymptotic linear scaling functional form of adsorption induced stress (AIS) at low coverage, as predicted by continuum elastic theory, using first-principles calculations of CO adsorption on Au(100) and K(100) surface. We observe that when the lateral separations between the adsorbents on a surface is ∼8-10 Å, the adsorption induced strain field on the surface no longer overlap. This sets a limit to indirect substrate-mediated inter-adsorbent interaction, which also corresponds to the limit beyond which the AIS scales linearly with coverage. At high coverage, AIS show non-monotonous variations and possible interpretation of these variations is suggested.

[1]This work is supported by NSF and DOE.

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Date submitted: 02 Dec 2004 Electronic form version 1.4