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ADHESION AND SCALING ADHESION BETWEEN COMMENSURATE AND INCOMMENSURATE METALLIC SURFACES

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Abstract

The adhesive energy and the scaled adhesive universal binding energy distance relationship for diverse metals from the knowledge of surface energy and density decay parameter were both studied, this is to enables the simple prediction on of the adhesive-energy-distance relation. The result of calculated adhesion binding curve was taken and scaled into a universal curve as a function of separation. This was achieved by using a universal function with best fitting parameter; Thomas-Fermi screening length and the separating distance. Result of the shows the variation of scaled adhesion energy for homogeneous metallic surfaces and the scaled adhesive energy increases with increase in scaled separation and the scaled adhesive energy tends to zero as the scaled separation tends to 8.0 a.u. The result follows the same trend for all the homogeneous as well as inhomogeneous metallic surfaces but as a function of the electron density parameter of the metal. The result obtained is in agreement with the ones obtained by previous works.

Keywords: adhesive, scaled adhesion, homogenous and inhomogeneous surfaces.