

An investigation of the size-dependent cohesive energy of spherical metallic nano-particles

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Abstract:

The size-dependent potential parameters method is used to investigate the effect of many-body interactions on the structural stabilities and the cohesive energy of Molybdenum (MO) and Tungsten (W) spherical metallic nano particles. The total interaction energy is represented in terms of two-body Mie-type potential plus a three-body Axilord-Teller-type potential . Results emphasized the importance of multi-body forces to explain nano-structures. The predicted cohesive energy for these nano-particles is observed to decrease with decreasing their sizes, a result which is in the right direction at least to predict the experimental values of Mo and W nano-particles.