Adsorption of ^4He_N and $^4He_N{}^3He$ clusters on cesium

P. Stipanović, L. Vranješ Markić , I. Bešlić, and T. Martinić

University of Split, Faculty of Science, Croatia

The ground state properties of helium mixed clusters ^4He_N and $^4He_N{}^3He$, for $N \leq 40$ adsorbed on the surface of cesium are studied using variational and diffusion Monte Carlo calculations. Binding properties are determined using two different He-Cs interaction potentials. For the smallest clusters, cluster self-binding is stronger than in two or three dimensions. For $N > 10$ self-binding in three dimensions is stronger for both types of He-Cs interaction potential. Results are compared to recent density functional calculations. The emergence of edge states of ^3He, localized along the contact line of ^4He cluster with the cesium surface, is studied. First indication that ^3He atom prefers to be close to the contact line appears already for $^4He_3{}^3He$ cluster.