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Low Temperature Energy Phase Diagrams of Dimer Adsorption on Square Nanotubes With Attractive First Neighbor Interactions ALAIN PHARES, Villanova University, DAVID GRUMBINE, JR., St. Vincent College — We consider dimer adsorption on a nanotube with square lattice geometry that is an arbitrary number M of atomic sites in normal cross-section. First-neighbor adsorbate-adsorbate interactions, V, are assumed to be attractive while second-neighbor interactions, W, are allowed to be repulsive, attractive or negligible. The effective potential energy per dimer, μ, is the sum of the adsorbate-substrate interaction energy and the chemical potential of dimer molecules in the medium surrounding the nanotube. At low temperature, the energy phase diagrams are two-dimensional with parameters $u = W/V$ and $v = \mu/V$. These diagrams have been generated numerically for increasing values of M. They fall into two categories which depend on whether M is even or odd. The occupational characteristics of the phases have analytic expressions in M. The occupational configurations of, and line boundaries between phases are determined.

Alain Phares
Villanova University

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