

Abstract Submitted
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Thermodynamic properties Ar films on the surface of a bundle of carbon nanotubes¹ MILTON COLE, NATHAN URBAN, Penn State University, SILVINA GATICA, JOSE RICARDO, Universidad de San Luis, Argentina — We employ canonical Monte Carlo simulations to explore the properties of an Argon film adsorbed on the external surface of a bundle of carbon nanotubes. The study is concerned primarily with three properties: specific heat, differential heat of adsorption, and Ar-Ar correlation functions. These measurable functions exhibit information about the dependence of film structure on coverage and temperature. Our results are intended to stimulate further experimental studies of this system and analogous systems involving other gases on nanotube bundles. One of the more interesting general results is that the specific heat is typically larger than might have been expected. Particularly remarkable outcome from the correlation function studies include the reduced longitudinal correlations in the groove and striped phases as T rises above 60 K. These results would be amenable to testing by diffraction experiments.

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