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### **Solid phase of Krypton on a carbon nanotube**

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Krypton is known to form commensurate (CS) and incommensurate (IS) solid phases on top of flat graphite. Similar phases are expected to form on the surface of a carbon nanotube (NT), provided that the radius ( $R$ ) is large enough. For smaller radii, the increasingly important effect of the curvature would eventually alter qualitatively the phase diagram preventing some phases and/or allowing new ones. Recently obtained experimental results of the adsorption of Kr and Ar on a single nanotube, show several quite remarkable, nearly vertical transitions. Those steps are observed and interpreted as cylindrical surface analogues of 2D monolayer transitions: vapor to commensurate solid (CS) and to an incommensurate solid (IS) phase coating the nanotube's surface. Our Monte Carlo simulations for Krypton and Argon on the external surface of an isolated single-walled carbon nanotube show an IS phase comparable to the experiment, however with a different density that may be attributed to an underestimation of the strength of the potential used in the simulations. In the simulations for Kr, a CS is also found provided that the potential used is anisotropic.