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**Adsorption-induced shape transitions in bistable carbon nanotubes** ERIC M. MOCKENSTURM, OLEG E. SHKLYAEV, MILTON W. COLE, VINCENT H. CRESPI, Penn State — Large diameter single wall carbon nanotubes are capable of changing geometry in response to the presence of physically adsorbed gas inside. Coupled to a gas reservoir, an initially collapsed tube can expand so that the adsorbent forms concentric shells on the inner part of the tube wall. Using a lattice gas model, we describe the evolution (as a function of gas chemical potential) of the configuration of the nanotube and the absorbed gas shells at zero temperature. The resulting tube shape and the number of the absorbed shells depend on the tube diameter and the species of the absorbed gas.

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