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Effects of substrate relaxation on adsorption in pores[1] SILVINA GATICA[2], Howard University, HYE-YOUNG KIM[3], Southeastern Louisiana University, GEORGE STAN[4], University of Cincinnati, MILTON COLE[5], Pennsylvania State University — Fluids in porous media are commonly studied with analytical or simulation methods, usually assuming that the host medium is rigid. Large qualitative effects are found for several systems, for which substrate relaxation may not be neglected. One application is a determination of the ground state of 3He in slit and cylindrical pores. With the relaxation, there results a much stronger cohesion than would be found for a rigid host. Similar increased binding effects of relaxation are found for classical fluids confined within slit pores or nanotube bundles. These effects include large changes of the critical temperature (slit pore and nanotube bundle substrates) and condensation of the quasi-one dimensional fluid (carbon nanotube substrate). arXiv:0810.0262v1 [cond-mat.mtrl-sci]

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