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Universal and nonuniversal supercritical adsorption in pores¹ HYE-YOUNG KIM, Department of Chemistry and Physics, Southeastern Louisiana University, Hammond, LA, S.M. GATICA, Department of Physics and Astronomy, Howard University, Washington, D.C., A.D. LUEKING, Department of Energy and Mineral Engineering, The Pennsylvania State University, University Park, PA, J.K. JOHNSON, Department of Chemical and Petroleum Engineering, University of Pittsburgh, Pittsburgh, PA, M.W. COLE, Department of Physics, The Pennsylvania State University, University Park, PA — A recent study of gas adsorption in porous carbons found a common trend in the gas uptake as a function of reduced pressure at the same relative supercritical temperature, with the exception of hydrogen [1]. Using analytical expressions (Henry's law) and computer simulations (quantum and classical) we demonstrate that the "universal" behavior of the classical gases and the "deviant' behavior of hydrogen can both be understood from simple combining rules and the role of quantum effects. Thus, we reject a hypothetical explanation of the data in terms of small pores permitting just hydrogen to enter. [1] D. F. Quinn, Carbon 40, 2767 (2002).

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Hye-Young Kim
Department of Chemistry and Physics,
Southeastern Louisiana University, Hammond, LA

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