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Effect of Confinement on the Bubble Points of Hydrocarbons in Controlled-Pore Glasses SHENG LUO, Harold Vance Department of Petroleum Engineering, Texas A&M University, JODIE LUTKENHAUS, Artie McFerrin Department of Chemical Engineering, Texas A&M University, HADI NASRABADI, Harold Vance Department of Petroleum Engineering, Texas A&M University, HADI NASRABADI TEAM — Phase behavior in shale remains a challenging problem in the petroleum industry due to many complexities. One complexity is the strong surface-fluid interactions in shale nano-scale pores. These interactions can lead to a heterogeneous distribution of molecules, which conventional bulk-phase thermodynamics fails to describe. Herein, we report a study on the bubble points of various hydrocarbons confined in nanoporous controlled-pore glasses of 4.3 to 38.1 nm pore diameter. Differential scanning calorimetry is used to measure the temperature at which the gas phase begins to form (i.e. bubble point). Besides pore diameter, the relative hydrocarbon loading in the controlled-pore glass is evaluated. The findings suggest that the bubble point is dramatically affected by pore diameter.

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