SUPPORTING INFORMATION

An innovative nucleation method for high and rapid hydrogen storage based on clathrate hydrates

Siyuan Chen[a], Yanhong Wang [a, c *], Shuanshi Fan[a], Xuemei Lang[a,b], Gang Li[a]

(*[a] School of Chemistry and Chemical Engineering, South China University of Technology, Guangzhou,510640, China; [b] Key Laboratory of Fuel Cell Technology of Guangdong Province, Guangzhou,510640, China; [c] Key Lab of Enhanced Heat Transfer and Energy Conservation, Ministry Education, Guangzhou,510640, China)*

***Corresponding author**

E-mail address: wyh@scut.edu.cn

Fig. S1 given below shows the pressure and temperature evolution along with the hydrogen uptake and instantaneous hydrogen uptake rate using the q-SF method under the experimental conditions of 274.15 K and 8.3 MPa.

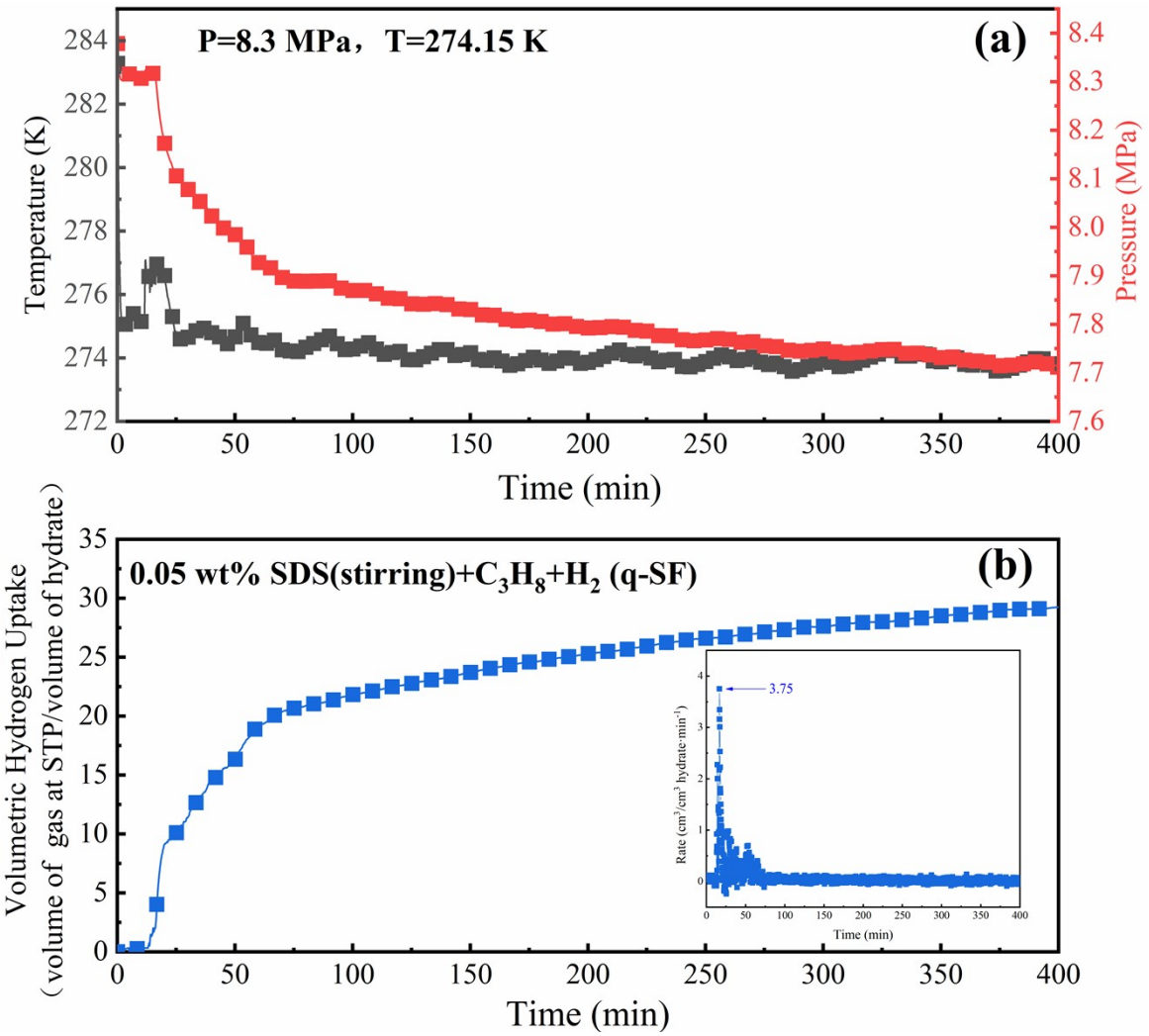

Fig. S1- Promoting effect of quasi-simultaneous formation on propane-hydrogen hydrates under mild conditions (a) temperature and pressure changes, (b) gas storage capacity and gas storage rate (C_{SDS} =0.05wt%, P = 8.3 MPa, T = 274.15 K).

Fig.S2 given below shows the variation of temperature and pressure over time with different SDS concentrations under the same initial experimental conditions of 18.2 MPa and 274.15 K.

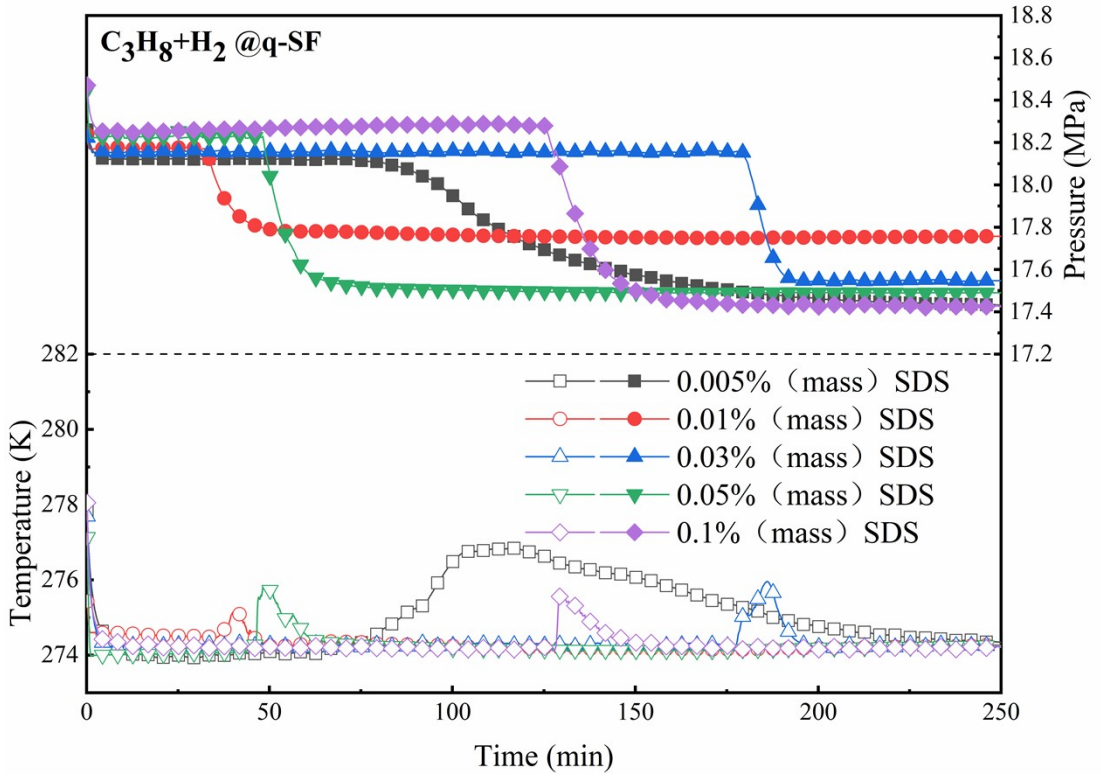

Fig. S2- The curve of pressure and temperature of propane-hydrogen hydrates quasi-simultaneous formation with different SDS concentrations (274.15 K and initial pressure of 18.2 MPa)