

Supplementary Material

# Principle and Feasibility Study of Proposed Hydrate-Based Cyclopentane Purification Technology

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As shown in Figure S1, a low-field NMR system (GeoSpec 12/53, Oxford Instruments, UK, 0.3 T, 12 MHz permanent magnet, 53 mm probe) was used to measure  $T_2$  distribution in this study. We used the following test parameters: time of recycle delay (RD) = 7500 ms; resonant frequency (RF) = 12.71 Hz; number of echoes (NOE) = 46,296; and the time between the  $90^\circ$  pulse and the first acquired echo (Tau) = 0.0127 ms.



Figure S1. Nuclear Magnetic Resonance System.

As shown in Figure S2, a X-ray diffractometer (Bruker D8 Advance) was used to measure hydrate structure in this study. X-ray diffraction analysis was conducted using filtered Cu K $\alpha$  radiation ( $\lambda = 0.154$  nm, operated at 40 kV and 40 mA). The  $2\theta$  range was set from  $5^\circ$  to  $60^\circ$ , with a step of  $1.5^\circ \text{ min}^{-1}$ .



Figure S2. X-ray diffractometer.

As shown in Figure S3, a Raman spectrometer (LabRAM HR Evolution, Horiba) was used to measure the Raman spectrum in this study. The Raman analysis was conducted using 532 nm laser.



**Figure S3.** Raman spectrometer.