

## Supporting information

### **Mechanistic insight into the displacement of CH<sub>4</sub> by CO<sub>2</sub> in calcite slit-nanopores: the effect of competitive adsorption**

Haoyang Sun,<sup>a</sup> Hui Zhao,<sup>a</sup> Na Qi,<sup>a</sup> Xiaoqing Qi,<sup>a</sup> Kai Zhang,<sup>a</sup> Wenchao Sun<sup>b</sup> and

Ying Li\*<sup>a</sup>

<sup>a</sup>Key Laboratory of Colloid and Interface Chemistry of State Education Ministry, Shandong University, Jinan, Shandong 250100, P. R. China

<sup>b</sup>School of Petroleum Engineering, China University of petroleum (East China), Qingdao, Shandong 266580, P. R. China

#### **Corresponding author:**

Ying Li

[Tel:\(86\) 0531-88362078](tel:(86)0531-88362078)

[Fax: \(86\) 0531-88364464](tel:(86)0531-88364464)

Email: [yingli@sdu.edu.cn](mailto:yingli@sdu.edu.cn)

Table S1. Calculated numbers of CO<sub>2</sub> molecules as bulk phase in displacement systems of different bulk pressures and 323 K.

| Bulk pressure (MPa) | Number of CO <sub>2</sub> molecule |
|---------------------|------------------------------------|
| 20                  | 722                                |
| 15                  | 622                                |
| 10                  | 356                                |
| 6                   | 132                                |