SUPPORTING INFORMATION

Static adsorption of an ethoxylated nonionic surfactant on carbonate minerals

Guoqing Jian¹, Maura C. Puerto¹, Anna Wehowsky¹, Pengfei Dong¹,
Keith P. Johnston², George J. Hirasaki¹* and Sibani Lisa Biswal¹*

1. Department of Chemical and Biomolecular Engineering, Rice University
2. McKetta Department of Chemical Engineering, the University of Texas at Austin,

Figure S1 Adsorption and desorption of Nitrogen BET surface area test on different materials
Calibration Curve for $C_{12-14}(EO)_{22}$

\[ y = 1.4757x + 4.0602 \]

\[ R^2 = 0.9992 \]

Figure S2 Calibration curve for nonionic surfactant using HPLC_ELSD method
Figure S3 Zeta potential of difference minerals including dolomite, calcite, silica and Kaolin (P=0.101 MPa, T=25°C)

Figure S4 Effect of brine on zeta potential of carbonate materials, brine composition is 30.27 g/L NaCl, 4.88 g/L MgCl₂·6H₂O, 6.69 g/L CaCl₂·2H₂O, and 0.50 g/L KCl (P=0.101 MPa, T=25°C)
The area of surfactant molecule occupied at the air-water interface could be calculated by the Gibbs adsorption equation:

$$\Gamma = -\frac{1}{R \cdot T} \left( \frac{\partial \gamma}{\partial \ln C} \right)_{T,P}$$

At room temperature, the area occupied by the surfactant monomer at the air/water surface is about 1.05nm² (25°C) in the 0.2 M Na₂SO₃ solution.