

Supplementary Information for

**Biosurfactant-Driven Desorption and Remediation of Heavy
Oil Contaminated Soils Underpinned by Molecular
Simulations and Microbial Dynamics**

Qi Xiu ^{a,1}, Honglin He ^{a,1}, Zhenghui Liu ^{b,1}, Xuan Ou ^a, Yifei Meng ^a, Kangbo Zhao ^a,
Qian Yang ^a, Xingrui Zhang ^a, Yahan Hou ^a, Shun Yao ^{a,*}, Peike Gao ^{c,*}, Wenjie Xia

^{a,*},1

* E-mail: Wenjie. Xia (wenjie.xia@nankai.edu.cn)

The file includes:

Supplementary FIGURES (1-5)

Supplemental Figures

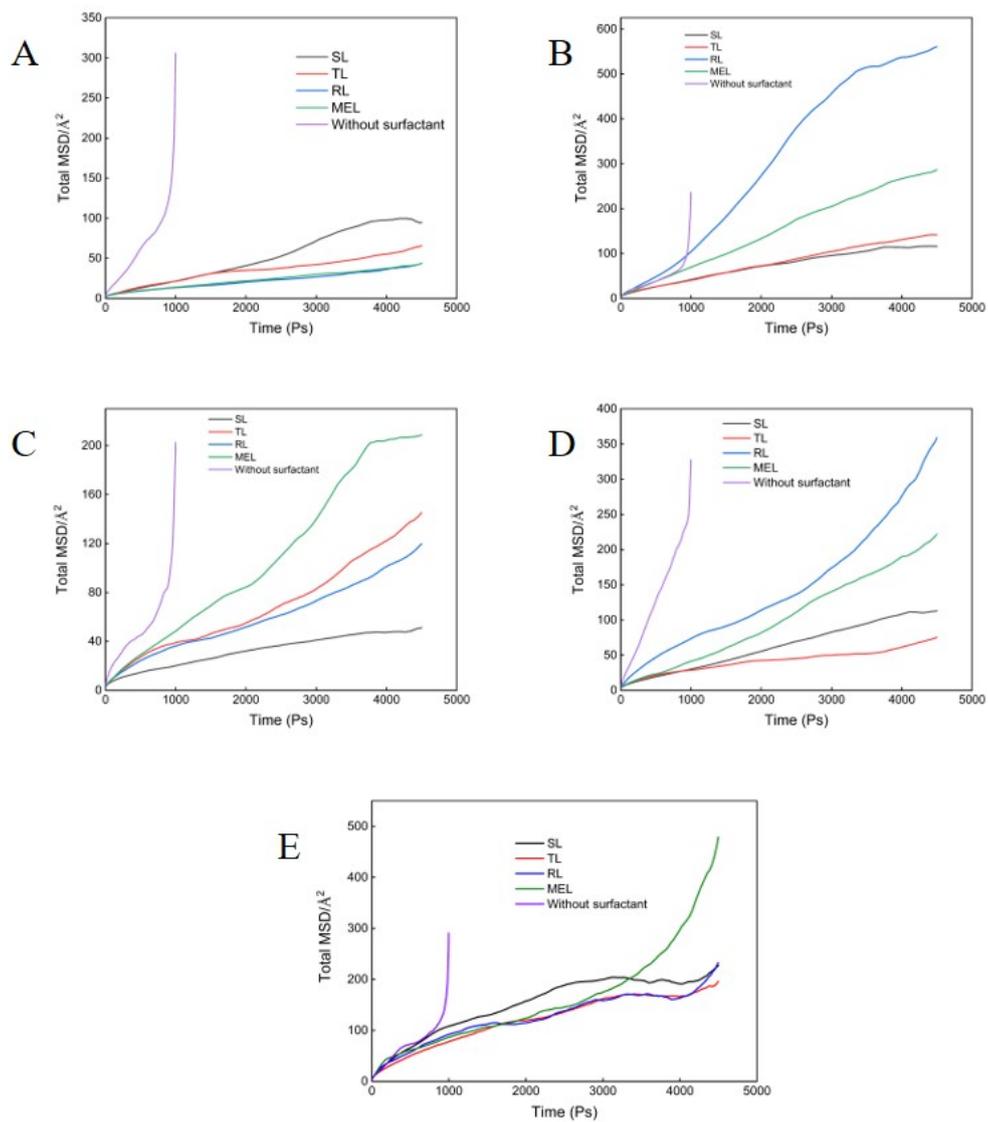


Fig S1. MSD of crude oil on different substrate. (A) Muscovite (B) Kaolinite (C) Ca⁺ montmorillonite (D) Na⁺ montmorillonite (E) SiO₂

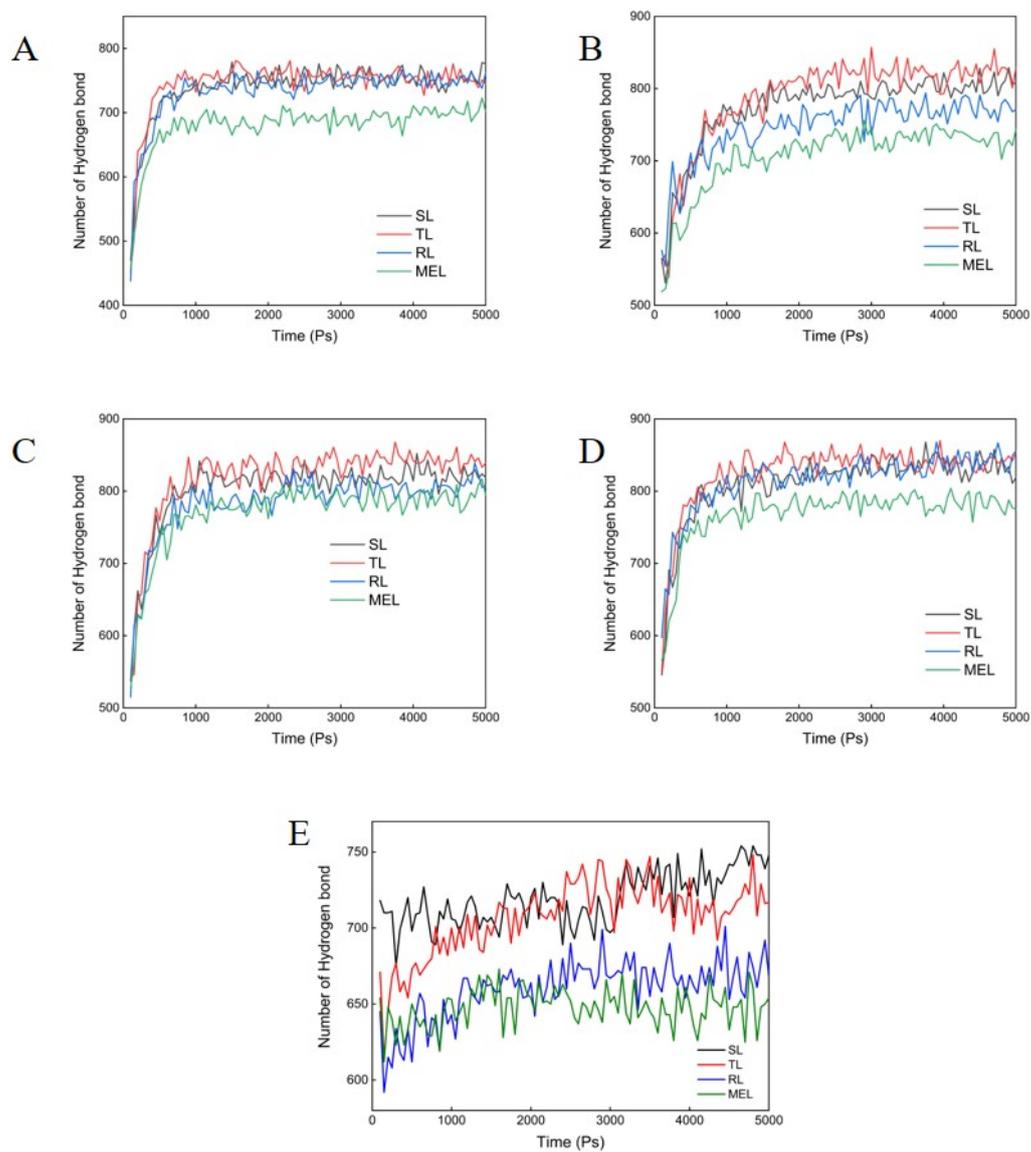


Fig S2. Number of hydrogen bond of crude oil on different substrates. (A) Muscovite (B) Kaolinite (C) Ca⁺ montmorillonite (D) Na⁺ montmorillonite (E) SiO₂

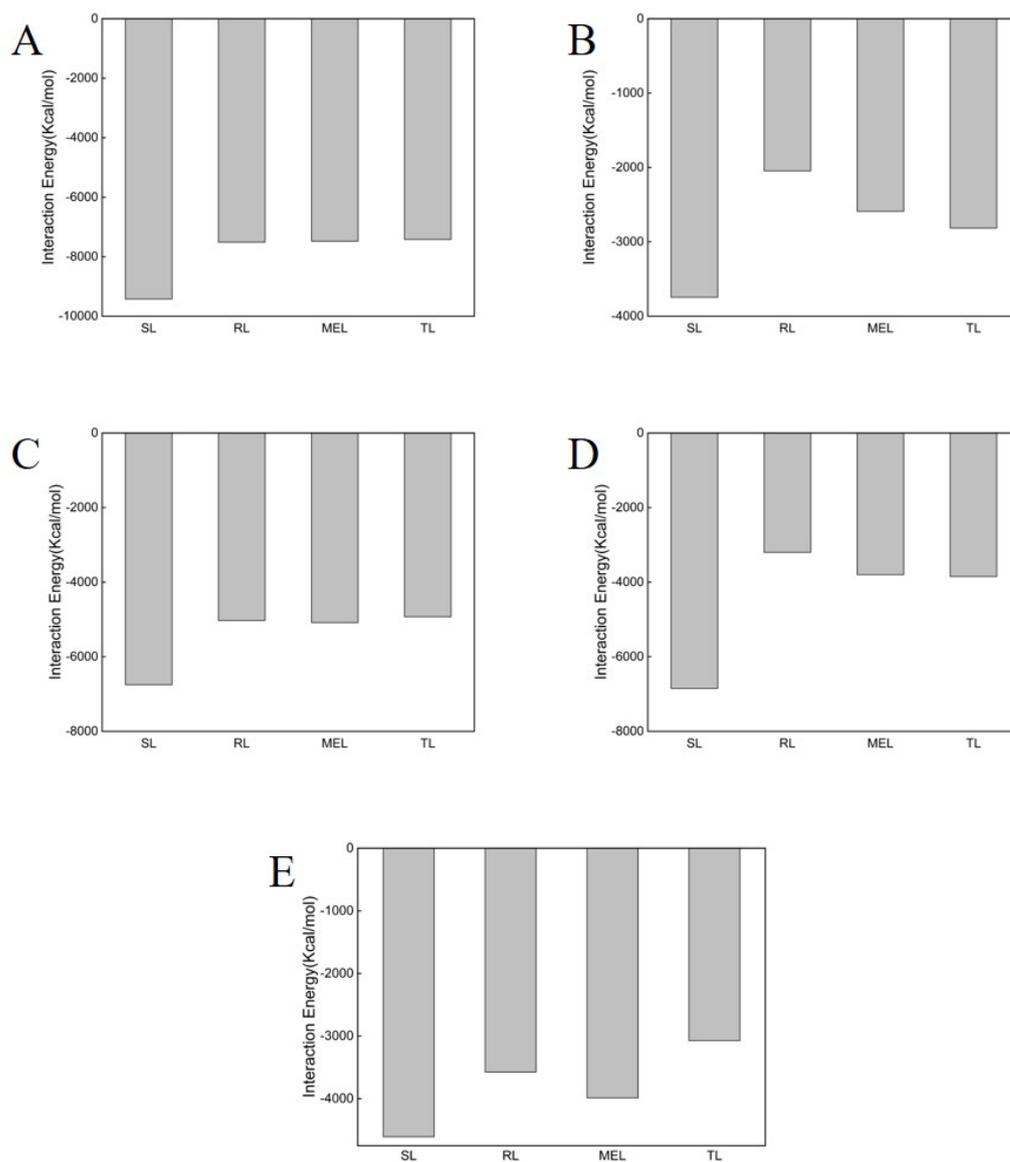


Fig S3. Interaction energy between crude oil and substrate. (A) Muscovite (B) Kaolinite (C) Ca⁺ montmorillonite (D) Na⁺ montmorillonite (E) SiO₂

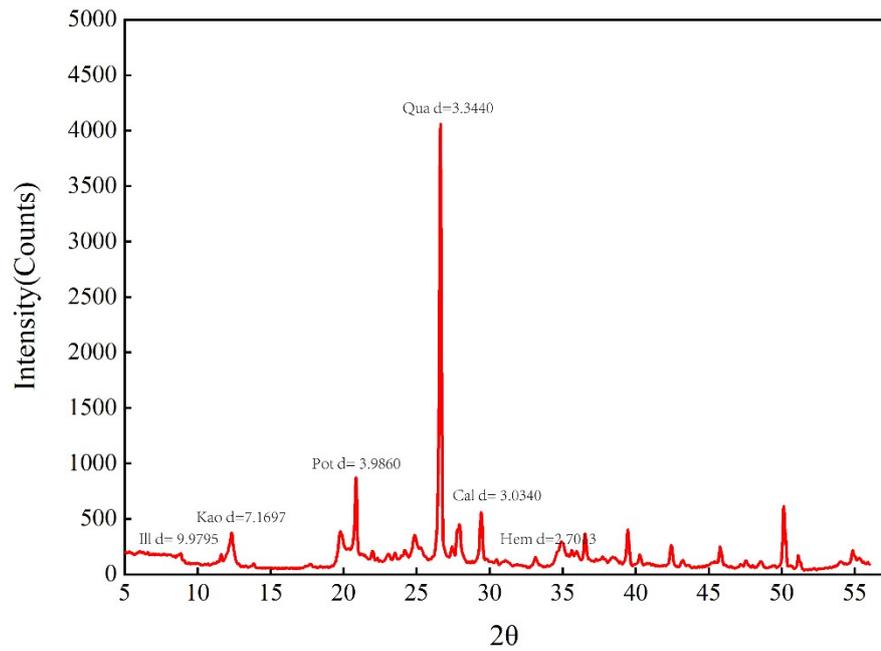


Fig S4. Mineral composition analysis of soil samples from Jilin oilfield



Fig S5. Processing of on-site samples for subsequent desorption experiments