Supporting information

Text S1 Batch test

To identify the tolerance of anaerobic digestion to SDBS, a batch test of SDBS with 0, 10, 15, 30, 100, 200, 400 mg/L at a COD/SO_4^{2-} ratio of 10 was performed. Three parallel activity tests were executed simultaneously. The initial COD was 2000 mg/L, and the remaining glucose and sodium sulfate were supplemented into 7 serum bottles of 100 mL specifications, respectively. Inject 50 mL of fresh sludge washed with phosphate buffered saline into the serum bottle to confirm that the mixed liquor volatile suspended solids (MLVSS) is 4800 mg/L and the pH value stays at 7.0 ± 0.2. After purging with nitrogen gas (20 min), seal the serum bottles with a butyl rubber stopper and press with an aluminum bottle cap. The serum bottles were incubated on a thermostatic oscillator at 35℃ ± 1℃ and 120 r/min. Methane volume was measured regularly. Finally, the filtered water samples were drawn from the serum bottles for COD analysis.

The results of SDBS effect on MPA are exhibited in Fig. S1, which indicate the SMA can maintain a high level at the doses ≤ 30 mg SDBS/L. With further increasing the SDBS concentration, the SMA exhibited a drop tendency. To avoid the direct inhibition of anaerobic microorganism by SDBS, 30 mg SDBS/L was selected to add into anaerobic reactor.

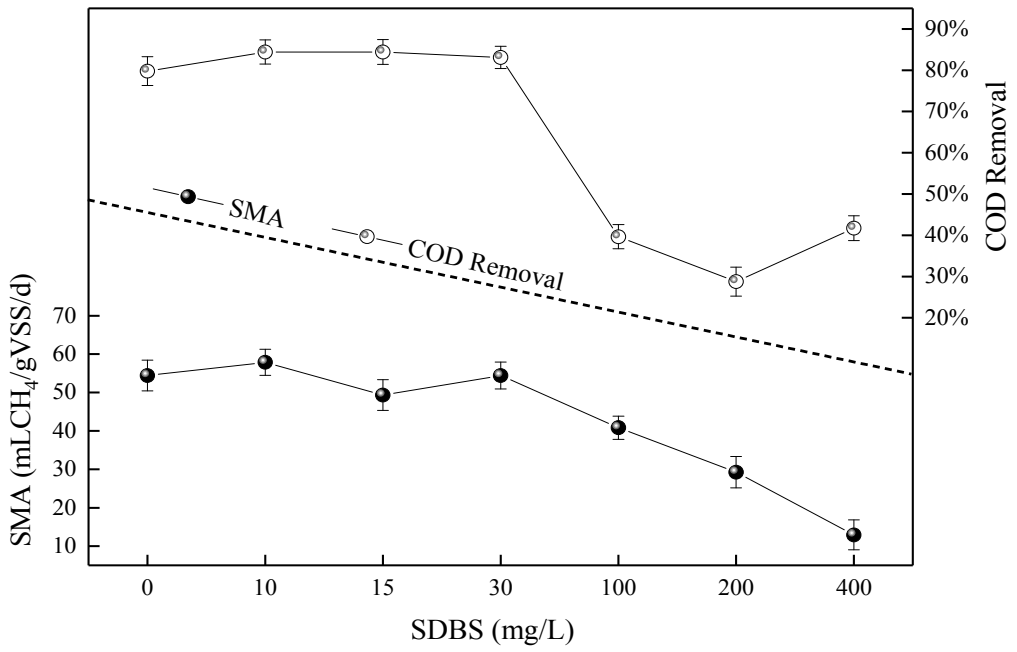

Fig. S1 Effect of various concentrations of SDBS on COD removal and SMA