

ELECTRONIC SUPPLEMENTARY INFORMATION

for the manuscript

A Comparative Study on the Flocculation of Silica and China Clay with Chitosan and Synthetic Polyelectrolytes

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Abstract:

Flocculation is still one of the most important and extremely efficient processes for water treatment. However, most industrial process such as in water treatment plants still use huge amounts of synthetic polyelectrolytes for the flocculation process. Here we compare the flocculation of two different suspended particles, i.e. silica particles and china clay, with the biopolymer chitosan and two common strong synthetic polyelectrolytes. As a flocculant, chitosan featured a minimum uptake rate of 0.05 mg/g for silica and 1.8 mg/g for china clay. PDADMAC for comparison possessed a minimum uptake rate of 0.05 mg/g for silica and 2.2 mg/g for china clay. Chitosan as an environmentally friendly biopolymer competes with the synthetic polyelectrolytes and thus represents a beneficial economic alternative to synthetic flocculants.

1 Results

1.1 Nitrogen sorption measurements for silica and china clay

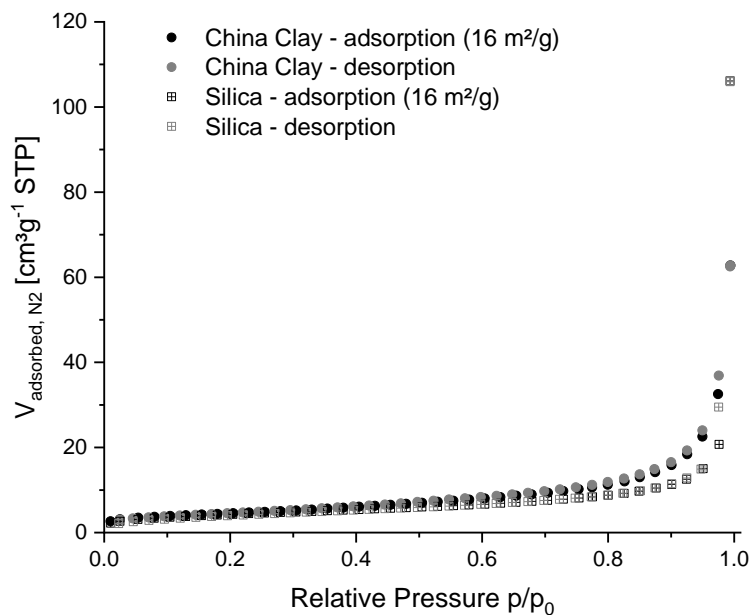


Figure S1: N_2 sorption isotherms measured at 77 K for china clay (full circles) and silica (crossed squares). Data points in the adsorption and desorption branch of the isotherms are indicated by black and gray coloration, respectively. The specific surface area of the china clay and silica was calculated to be $16 \text{ m}^2/\text{g}$ for both samples by multi-point BET method for $0.07 < p/p_0 < 0.26$.