Cover Page for Supporting Information

Manuscript title: Enhancement of textile-dyeing sludge dewaterability using a novel cationic polyacrylamide: role of cationic block structure

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Table S1

The details of flocculants used in the dewatering tests

Abbreviation	Cationic degree	Intrinsic viscosity (dL·g^{-1})	Conversion rate (%)	Synthetic method
CPTA	40	2.28	95.2	UTP
TPTA	40	2.23	95.8	PT
CCPDA	40	2.31	/	PT
CCPMA	40	2.29	/	PT

UTP: ultrasonic-initiated template copolymerization.
PT: polymerization technique without ultrasonic and template.

Text S1. Huggins equation for molecular weight of the polymer.

Molecular weight(Mr):

$$\mathbf{M_r} = 802 \cdot [\eta]^{1.25}$$

Where [ŋ] is the intrinsic viscosity of the polymer.

Text S2. Analytical methods for FCMC and SRF.

After a 10 min settling period, the conditioned sludge was poured into a Buchner funnel for filtering under a vacuum pressure of 0.09 MPa for 30 min or until the vacuum could not be maintained (in <30 min). FCMC was obtained by the Equation 1[1]:

$$FCMC\% = \frac{M_1 - M_2}{M_1} \qquad \text{Equation 1}$$

where *FCMC* is the filter cake moisture content, M_1 is the weight of the wet filter cake after filtration, and M_2 is the weight of filter cake after drying at 105 ℃ for 4 h. SRF was calculated from the Equation 2[2]:

$$SRF = \frac{2bpA^2}{\mu c}$$

Equation 2

where *SRF* is the specific resistance to filtration, *P* is the filtration pressure (N/m²), *A* is the filtration area (m²), *μ* is the viscosity of filtrate (N·s/ m²), *b* is the slope obtained from the plot of t/V_f(y) −V_f(x), where V_f is the volume of filtrate (m³) and *t* is the filtration time (s), and filtrate volume was recorded at 5 s, 10 s, 20 s, 30 s, 40 s, 50 s, 60 s, 70 s and 80 s during the filtration, and c is the weight of solids per unit filtrate volume (kg/m³), c= [(1/C_i)/[(100C_i-C_f)/100C_f], where C_i is the initial moisture content (%) and C_f is the final moisture content (%).
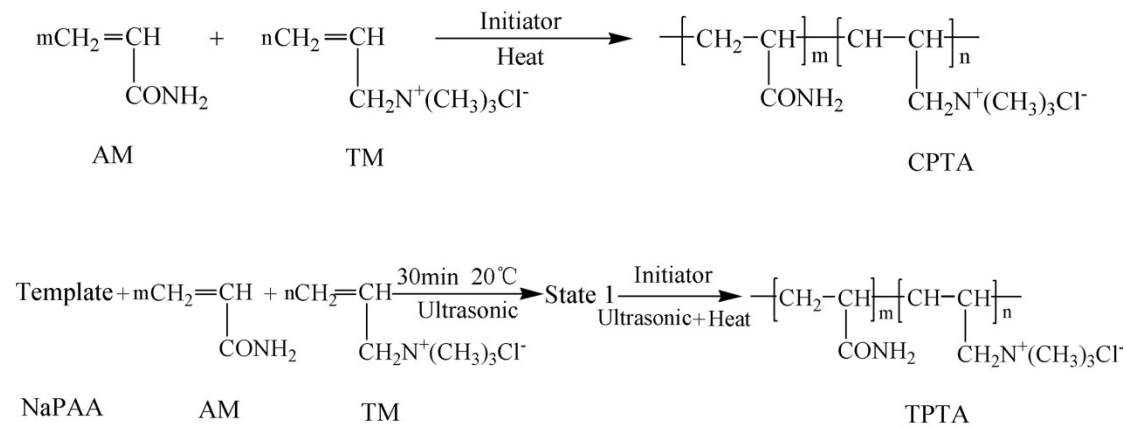
Figures

Fig. S 1. The proposed reaction routes for CPTA and TPTA

Fig. S 2. The sludge morphologies conditioned by (a) CPTA and (b) TPTA.

References

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