Characteristics of poly-silicate aluminum sulfate prepared by sol method and its application in the Congo Red dye wastewater treatment

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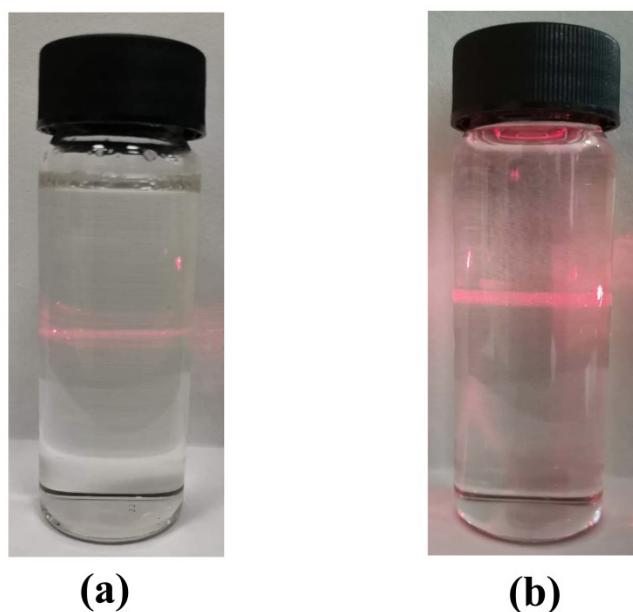
(a)   **(b)**

Fig.S1 Tindal effect of $PSAS_{1.11}$ coagulant; (a) $PSAS_{1.11}$ (Al/Si of 20, Al molar ratio of precursor to aluminum sulfate: 0/12) and (b) $PSAS_{1.11}$ (Al/Si of 20, Al molar ratio of precursor to aluminum sulfate: 1/12)

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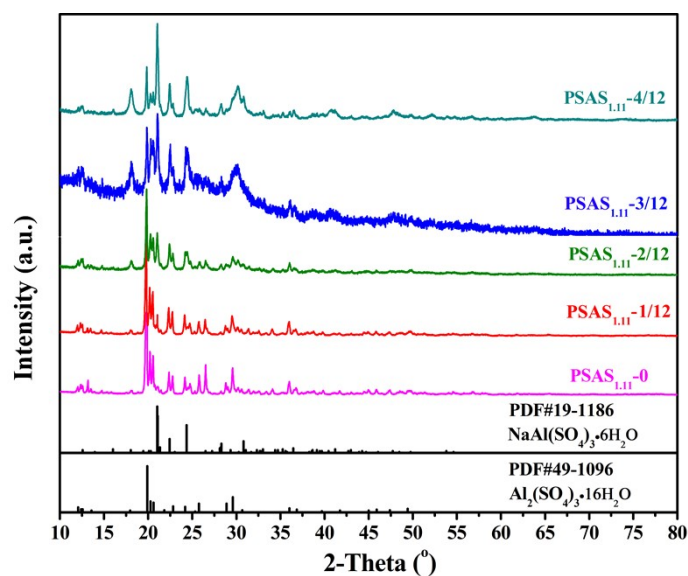 E-mail address: zyj@csu.edu.cn (Ya-jie Zheng).

Fig. S2 XRD of the PSAS$_{1.11}$ powder with 20 of Al/Si

Table S1 Distribution of Al species of determined by Al-Ferron timed complex method

PSAS$_{1.11}$		Ala (%)	Alb (%)	Alc (%)
	0	90.97	8.77	0.26
$n_{Al(presurcor)}/n_{Al(Aluminum\ sulfate)}$	1/12	75.19	23.31	1.5
	4/12	62.15	25.81	12.03

Table S2 Comparison of coagulation performance on Congo Red y using different coagulants

Coagulant	Initial concentration (mg L^{-1})	Optimum coagulant dosage (mg L^{-1})	pH	Removal color efficiency (%)	Refs
FeCl$_3$.6H$_2$O	500	200	3-9	99.92	[36]
PAC	500	150	3-9	99.82	[37]
Nature	60	25	4	74-85	[37]
PSM(N)	100	10	12	95.2	[38]
PSM(P)	100	8	13	92	[38]
Fe$_2$(SO$_4$)$_3$ and Ca(OH)$_2$	100	350	7	90	[39]
PSAS$_{1.11}$-1/12	100	40	11	98.6	**This work**

Table S3 Relationship between Congo Red concentration and absorbance

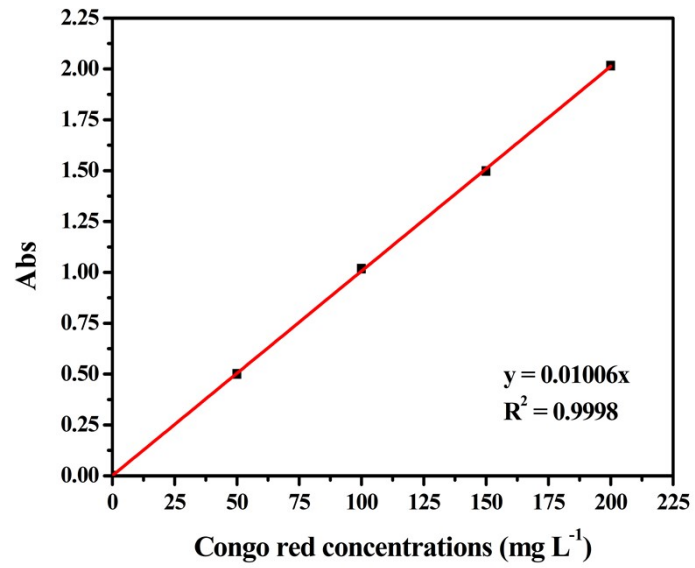| Concentration （mg/L）	Absorbance (nm)
0	0.000
50	0.501
100	1.018
150	1.498
200	2.016

$y = 0.01006x$

$R^2 = 0.9998$

Fig. S3 Congo Red concentration and absorbance fitting curve