

Electronic Supplementary Information

Redox activity of lignite and its accelerating effects on chemical reduction of azo dye by sulfide

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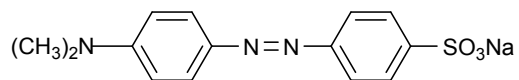
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Electronic supplementary information consists of 5 figures, 7 pages in total.

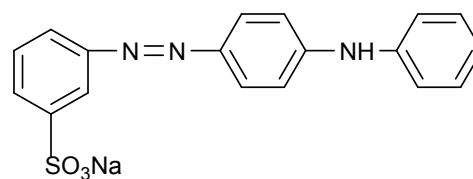
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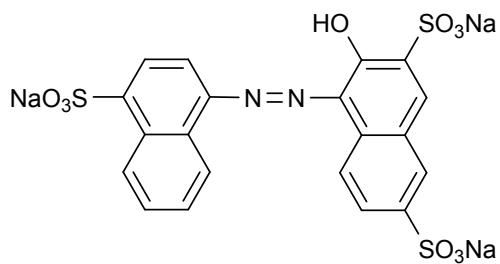
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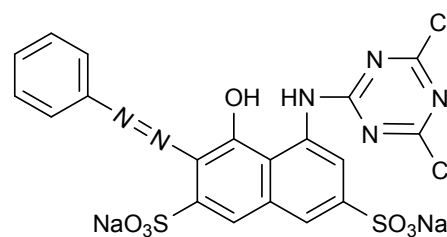
MO



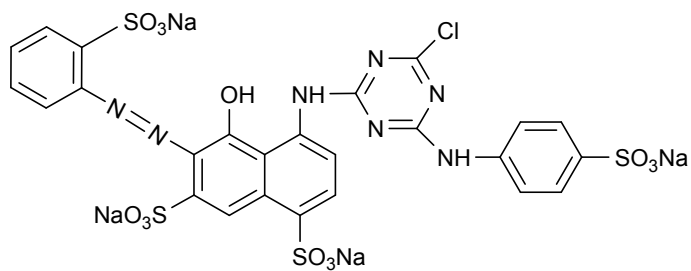
MYG



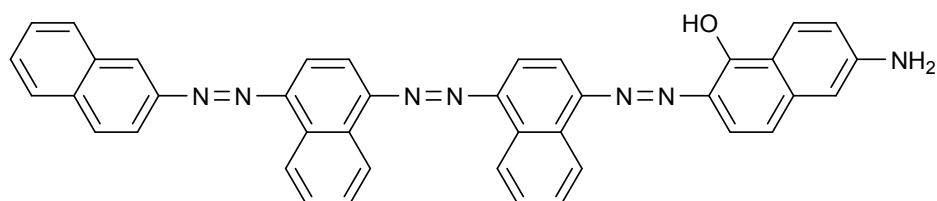
AR27



X-3B



K-2G



DB71

Fig. S1. Chemical structures of azo dyes investigated in this study.

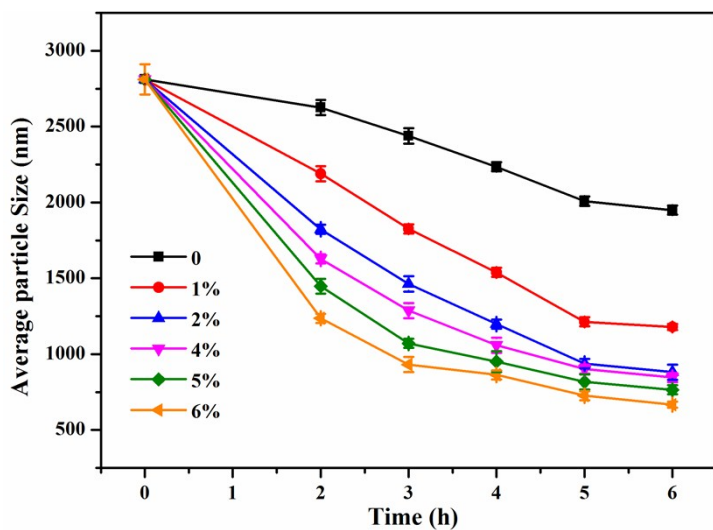


Fig. S2. Effects of NaCl concentration on average particle size of SXL during chemical decolorization of AR27.

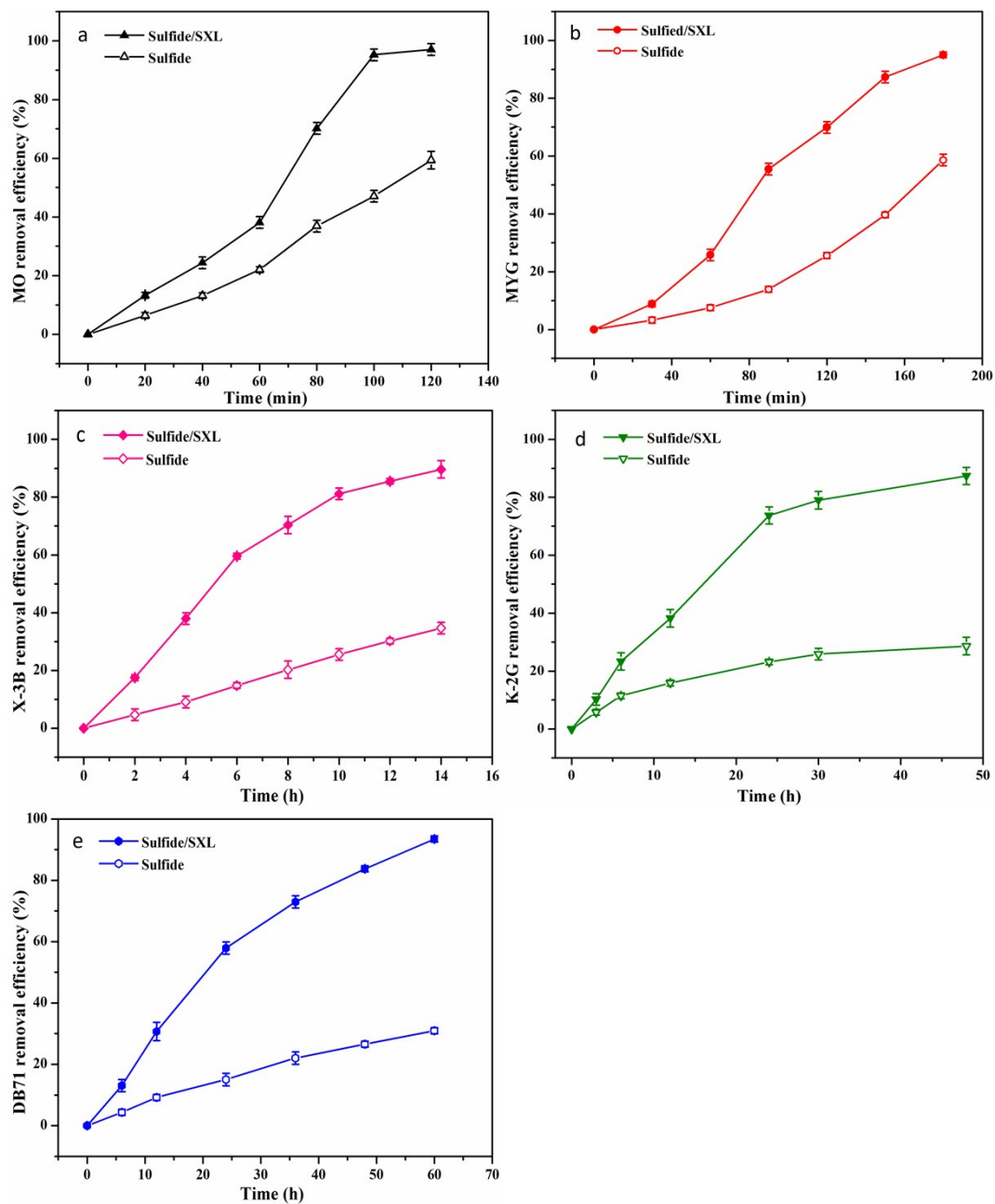


Fig. S3. Decolorization of (a) MO, (b) MYG, (c) X-3B, (d) K-2G, and (e) DB71 by sulfide in the absence or presence of SXL.

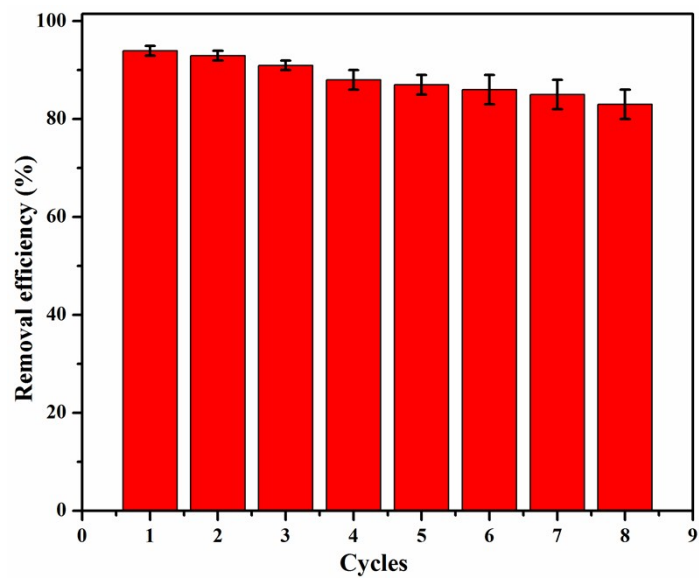


Fig. S4. Repeated decolorization of AR27 by sulfide in the presence of SXL.

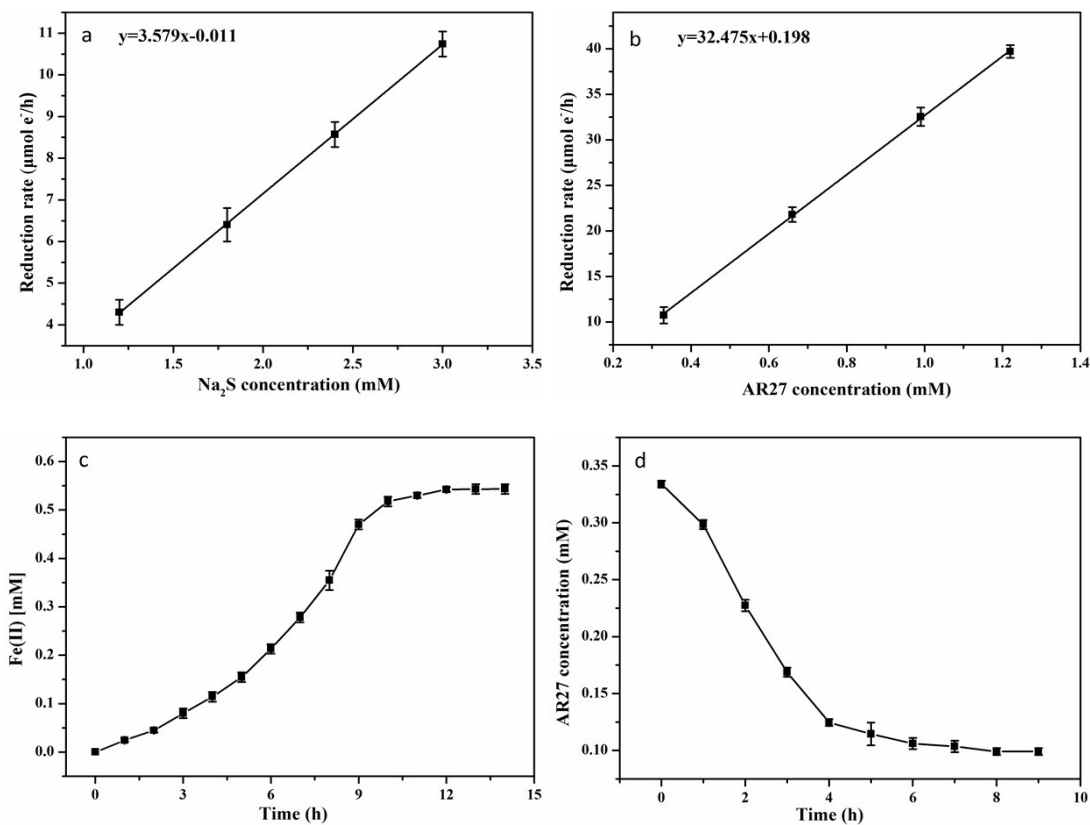


Fig. S5. Direct AR27 reduction rates under (a) sulfide-limited and (b) dye-limited conditions. (c) Reduction capacity of SXL (expressed by Fe(II) generated during ferrozine assay) reduced by sulfide at different time points and (d) time course of AR27 reduction in the presence of SXL_{red} .

Average lignite particle size measurement using dynamic light scattering (DLS)

Before measuring the average particle size of lignite sample, the performance of dynamic light scatter (Zetasizer Nano ZS90) was evaluated with SiO₂ particles (Sinopharm) in standard size (20, 50, 100, 200, 500, 1000, and 2000 nm) in 50 mM phosphate buffer and 1-6% NaCl solution. The measured values were credible when the differences between measured and standard values were less than 1%. At intervals, lignite samples were taken from the experimental systems, sonicated for 20 min, diluted 20 times with corresponding NaCl solution, equilibrated at 25°C for 2 min and then measured by DLS. Independent triplicates of each set of samples were measured. Each measurement consisted of 11 runs and the time of every run was about 10 s. After that, the average particle sizes and particle size peaks of lignite samples were obtained.