

**Remarkable deep de-lignin in paper wastewaters over Fe₂O₃/γ-Al₂O₃ Catalysts
with catalytic wet peroxide oxidation method**

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The UV-Vis absorption spectra of lignin under the initial pH is 9.0, reactions temperature is 75 °C. Exploring the different reaction times and the results are shown in Fig.S1. The intensity of absorption is reduced in the entire wavelength from 200 to 340 nm as the reaction time increase. In a separate experiment the absorbance at 280 nm plotted against the concentration of lignin give a linear curve showing that the absorption measurement offers a convenient method to evaluate the degradation of lignin.

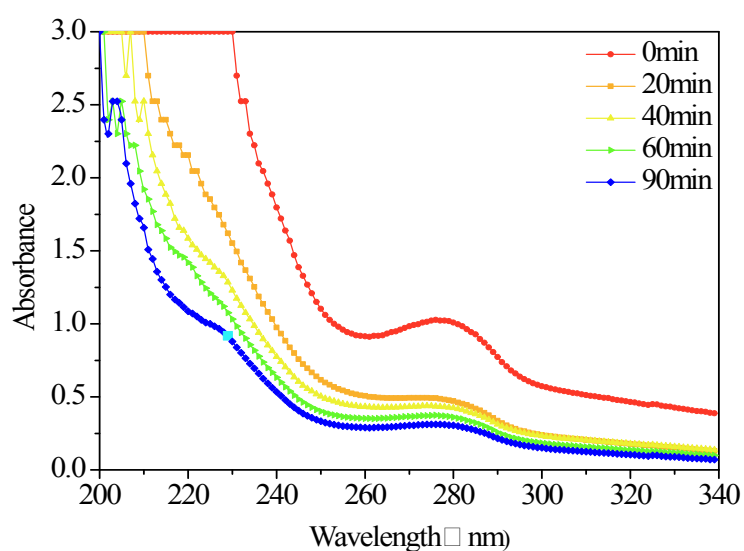


Fig. S1. UV-vis absorption spectra of lignin at different reaction times.

The experiment of the Oxidation of lignin have been test without H_2O_2 , as shown in Fig.S2 Catalyst surface has certain adsorption, but when hydrogen peroxide oxidation degradation of lignin is even more obvious.

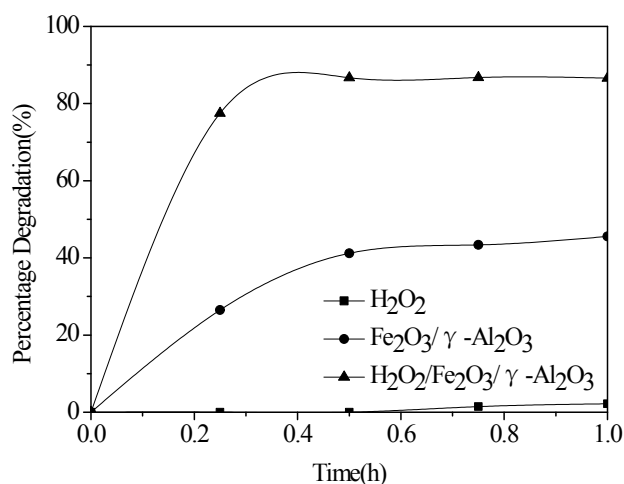


Fig. S2. Effect of catalyst adsorption and only oxidant (catalyst dose 6g/L; concentration of H_2O_2 6.396 mM; pH=9; T=348

The experiment of the Oxidation of lignin have been test without H_2O_2 , As shown in Fig. S2 Catalyst surface has certain adsorption, but when hydrogen peroxide oxidation degradation of lignin is even more obvious. We also test the degradation of lignin by only H_2O_2 , and found almost no degradation by only oxidation.