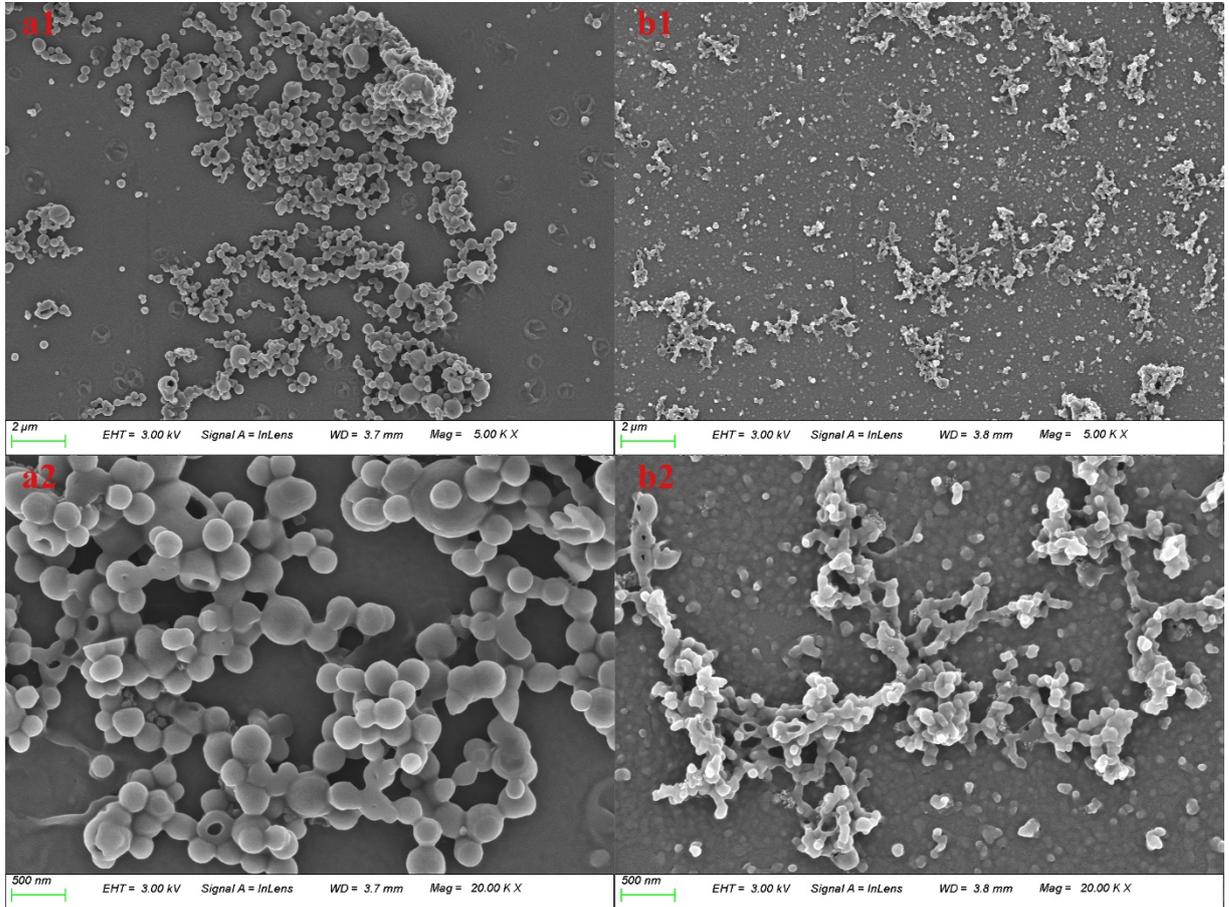


S1

SEM

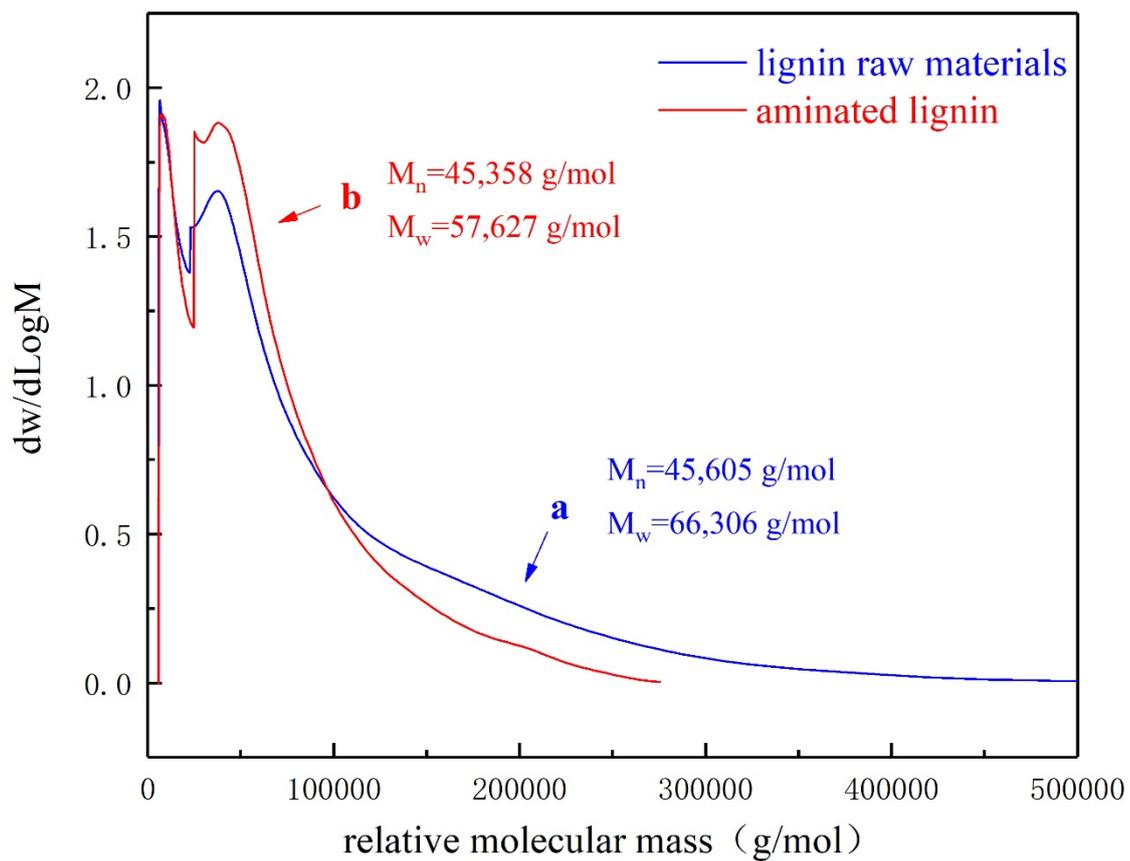
the morphologies of lignin (a1,a2) and aminated lignin (b1,b2) (The original Images belong to the content of Section 3.1 of the paper.)



S2

GPC

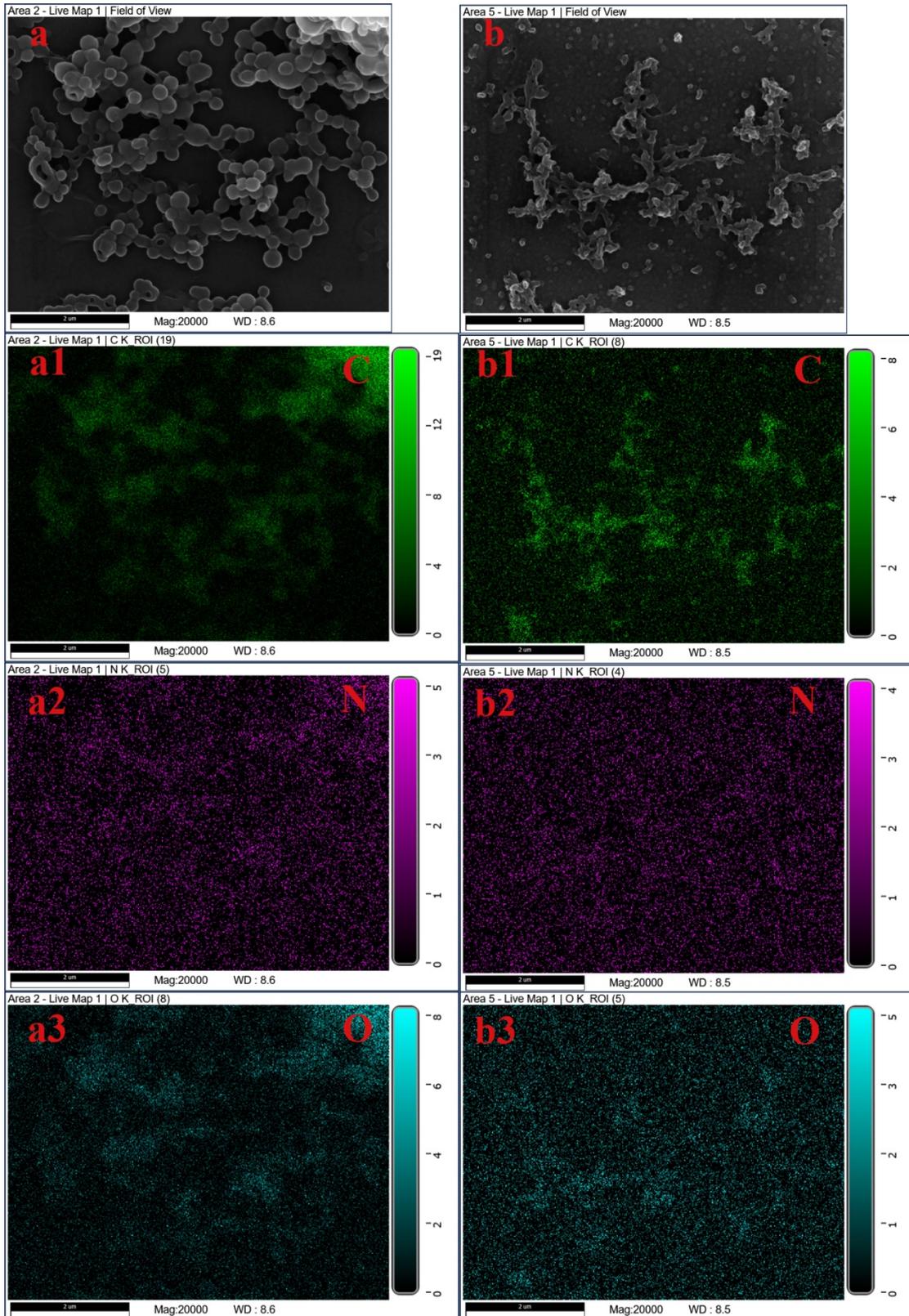
The molecular weight distribution of the generated aminated lignin and the used lignin raw materials(The original Images belong to the content of Section 3.2 of the paper.)



S3

EDS

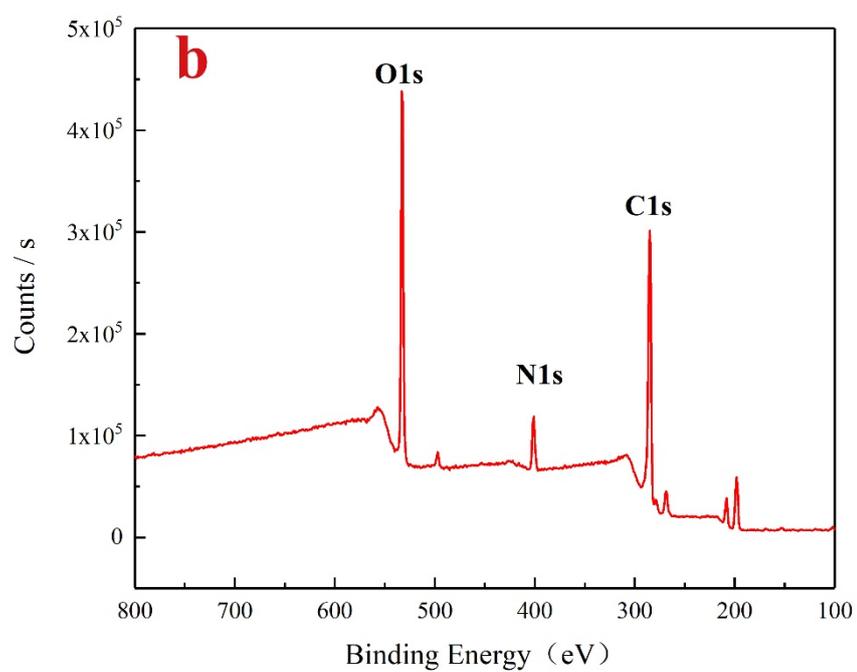
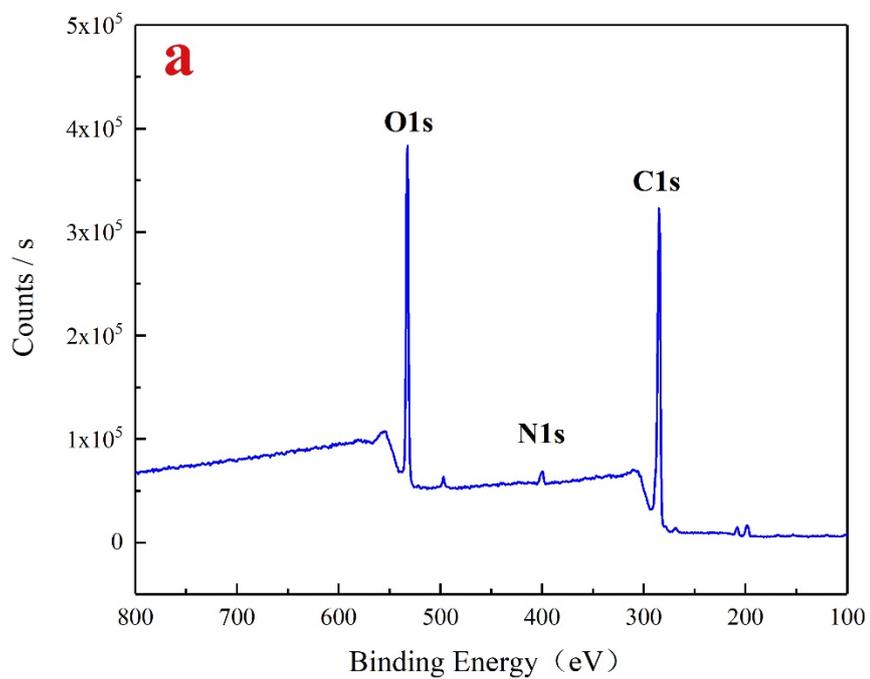
lignin raw material(a) aminated lignin(b) (The original Images belong to the content of Section 3.3 of the paper.)



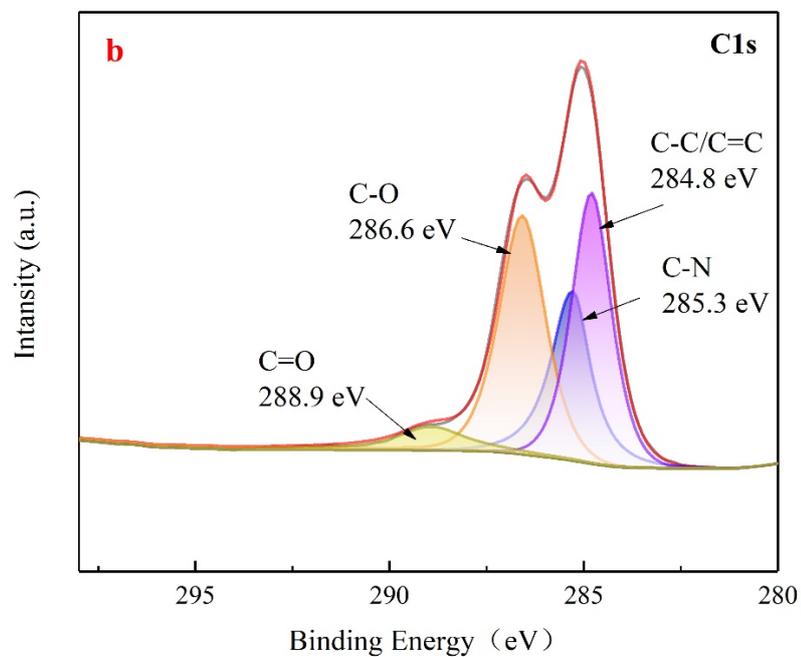
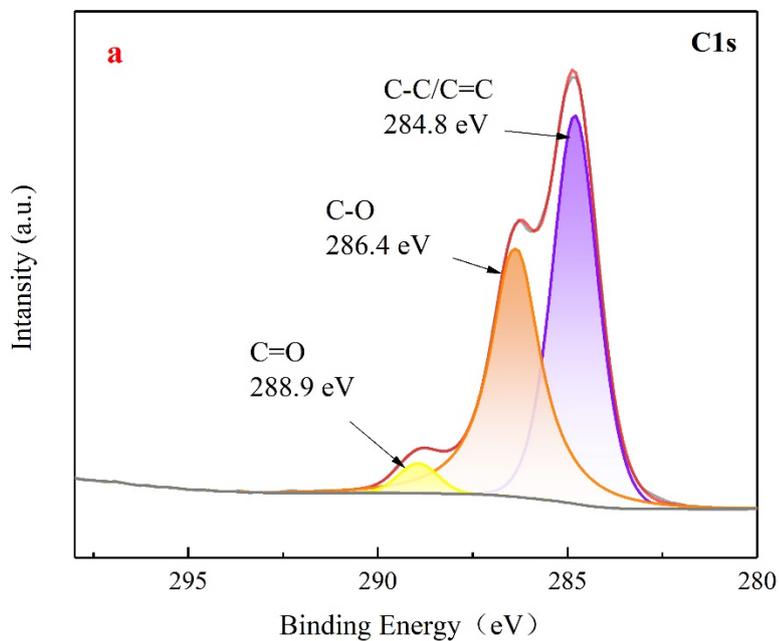
S4

XPS

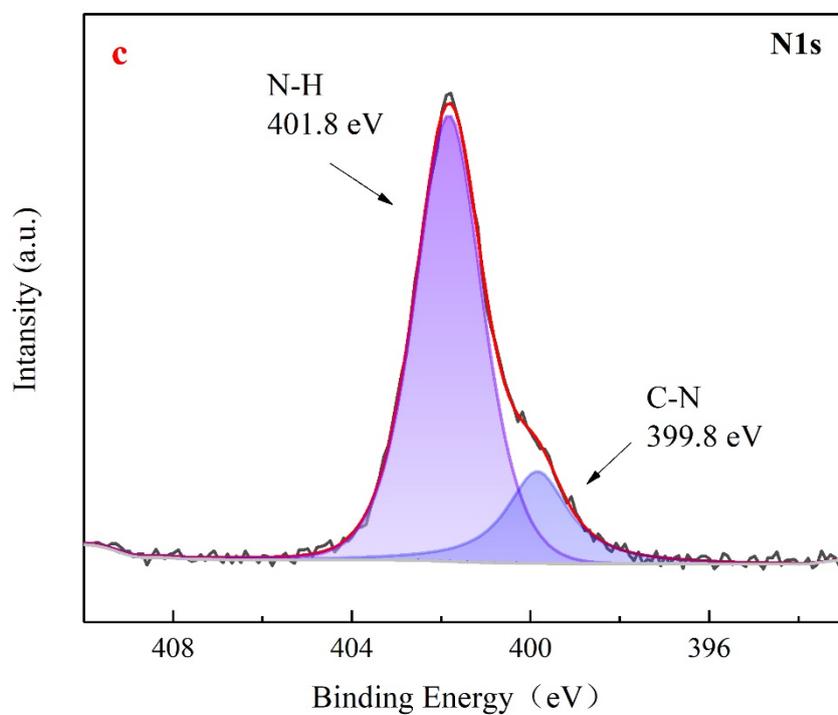
full spectrum of lignin raw material (a) and aminated lignin (b) (The original Images belong to the content of Section 3.4 of the paper.)



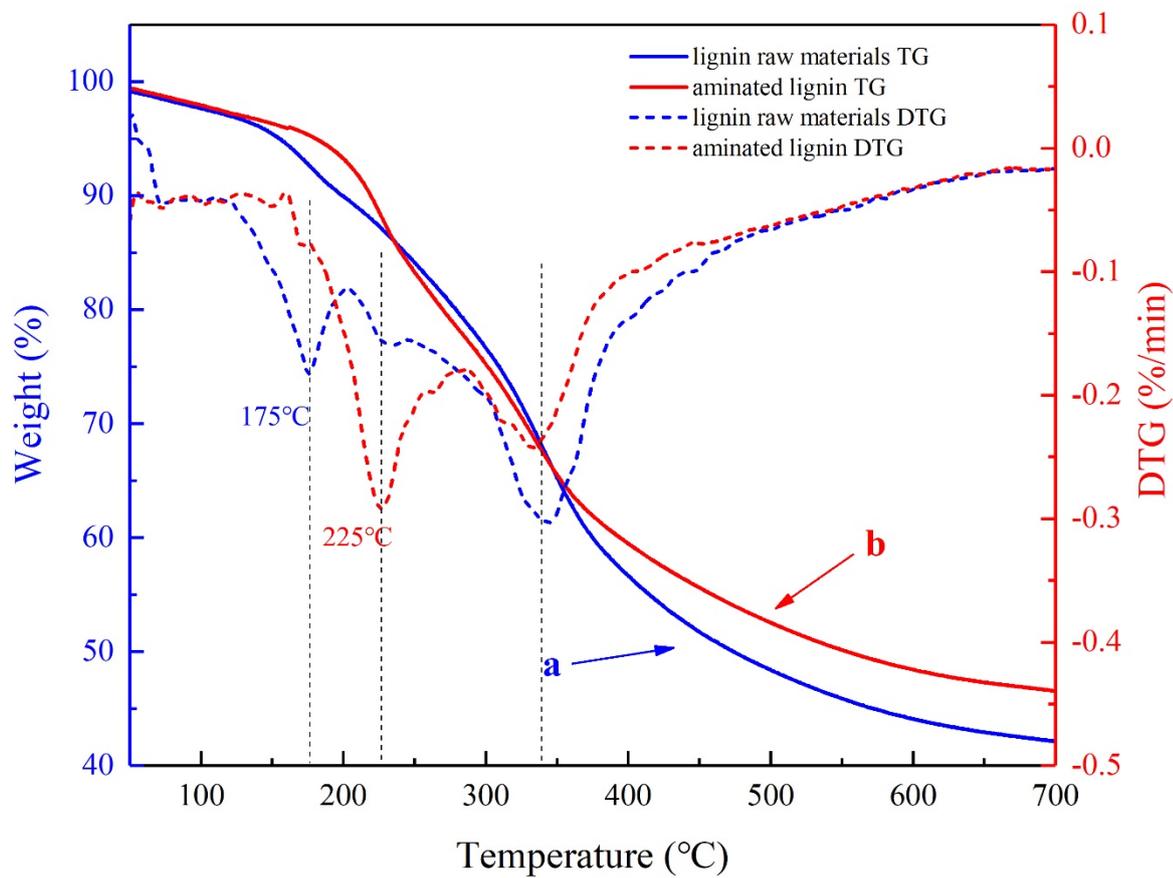
the fine XPS spectra of C1s of lignin raw material (a) and aminated lignin (b) (The original Images belong to the content of Section 3.4 of the paper.)



the fine XPS spectra of N1s of aminated lignin (c) (The original Image belongs to the content of Section 3.4 of the paper.)



Thermogravimetric analysis (TGA) and derivative thermogravimetry (DTG) of lignin raw material (a) and aminated lignin (b). (The original Images belong to the content of Section 3.5 of the paper.)

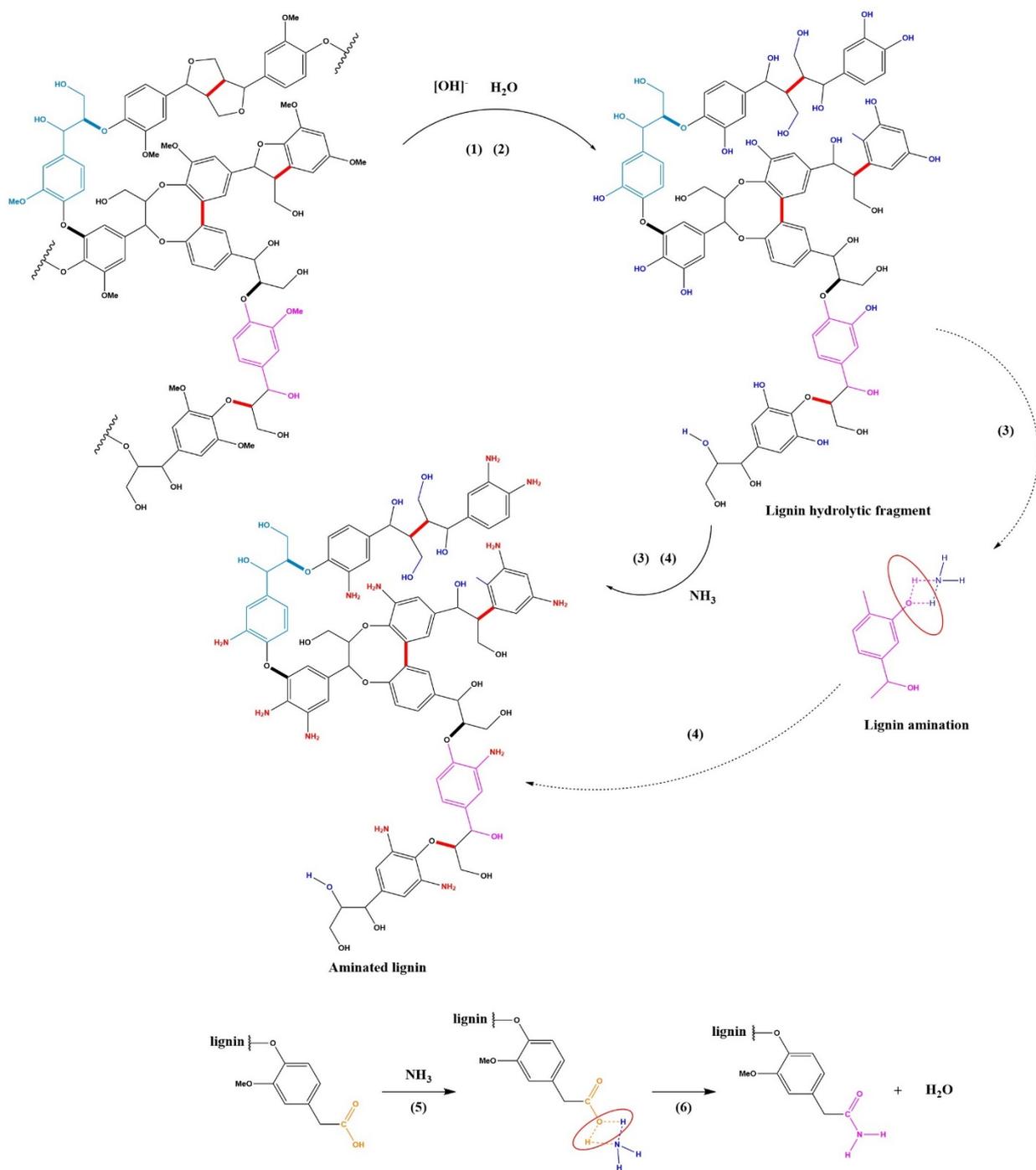


S6

Water solubility of aminated lignin (The original Images belong to the content of Section 3.6 of the paper.)



Mechanisms of lignin ammonification reaction (The original Images belong to the content of Section 3.7 of the paper.)

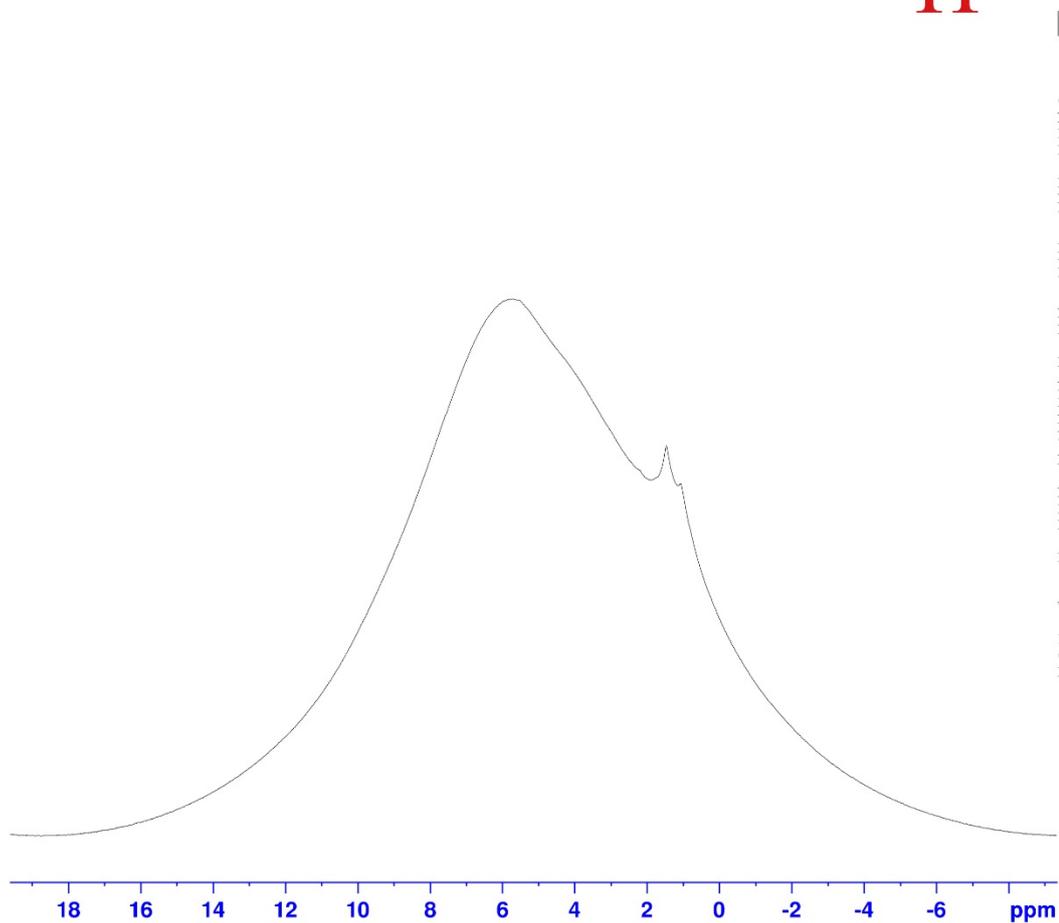


S8

Solid NMR spectra of lignin raw material(a) and aminated lignin(b), a1a2 for hydrogen spectrum, b1 and b2 for carbon spectrum.

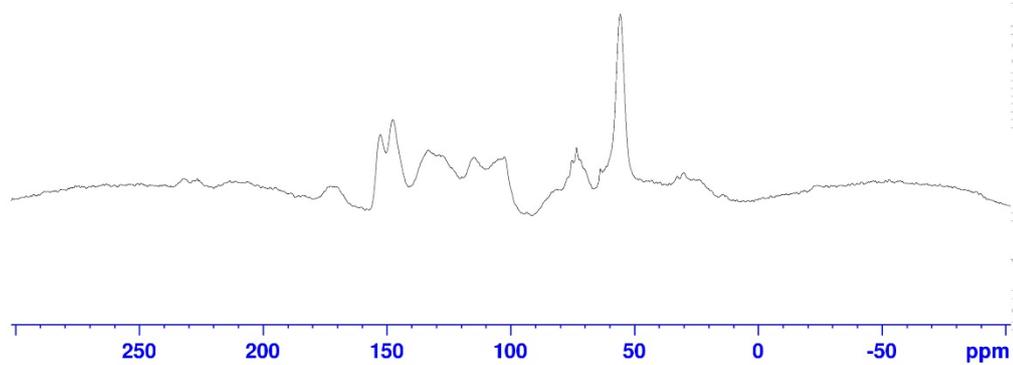
a1

H



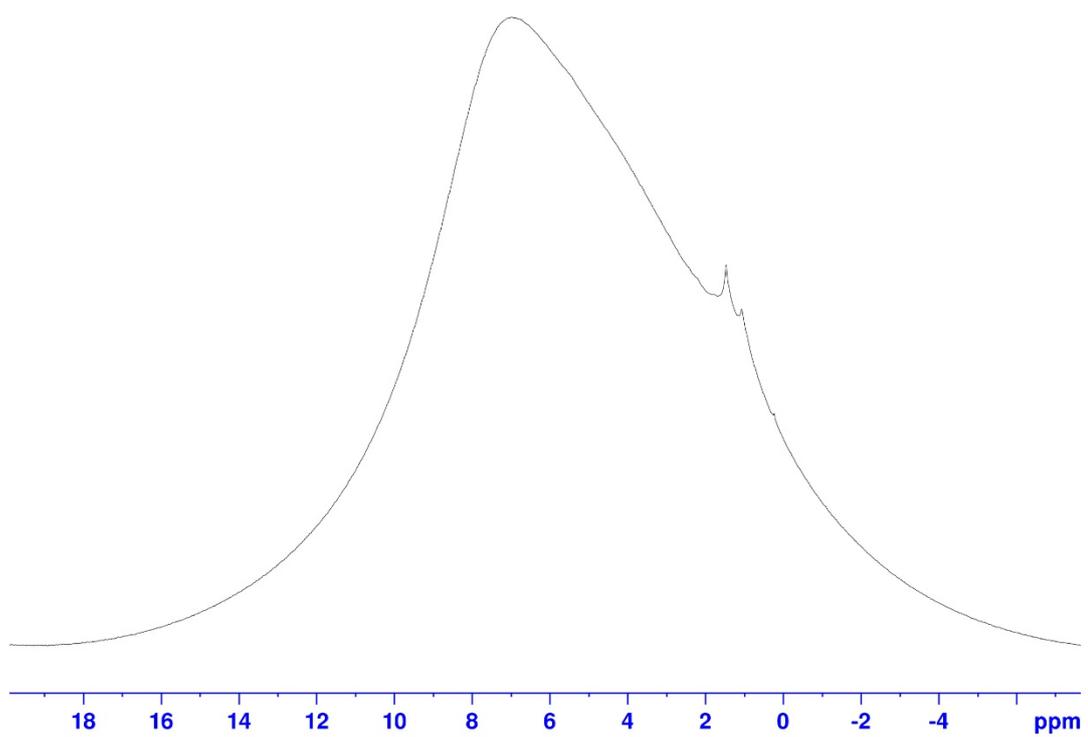
a2

C



b1

H



b2

C

