Hybrid Polybenzoxazine with Tunable Properties

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Supplementary Materials:
Figures S1-S2
Scheme S1
Reference 1-2

Descriptive legends for each item of supplementary materials

Figures S1–S2
Figure S1: 1H NMR spectrum of U-da.
Figure S2: 13C NMR spectrum of U-da.
Scheme S1
Scheme S1: Polymerization of the hybrid polybenzoxazine.
Reference (1-2)

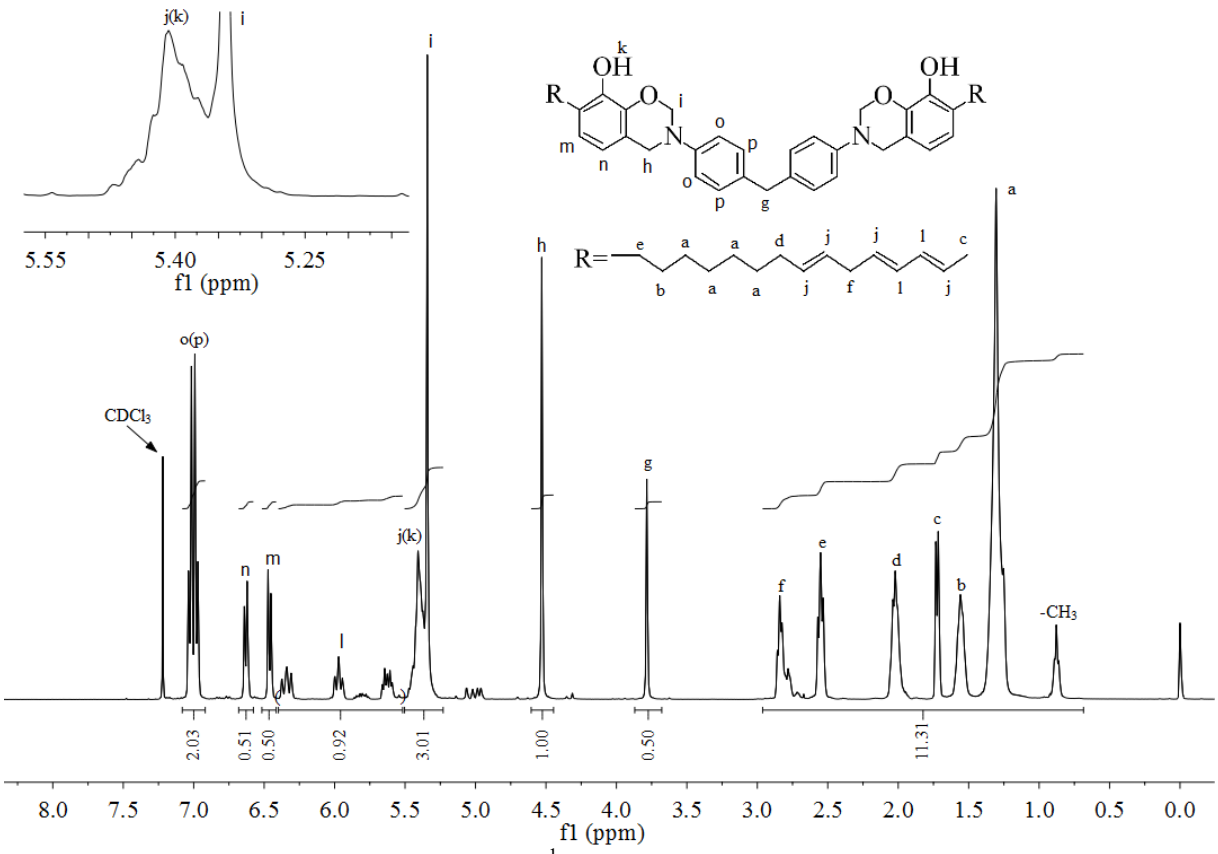

Figure S1. ^{1}H NMR spectrum of U-da.

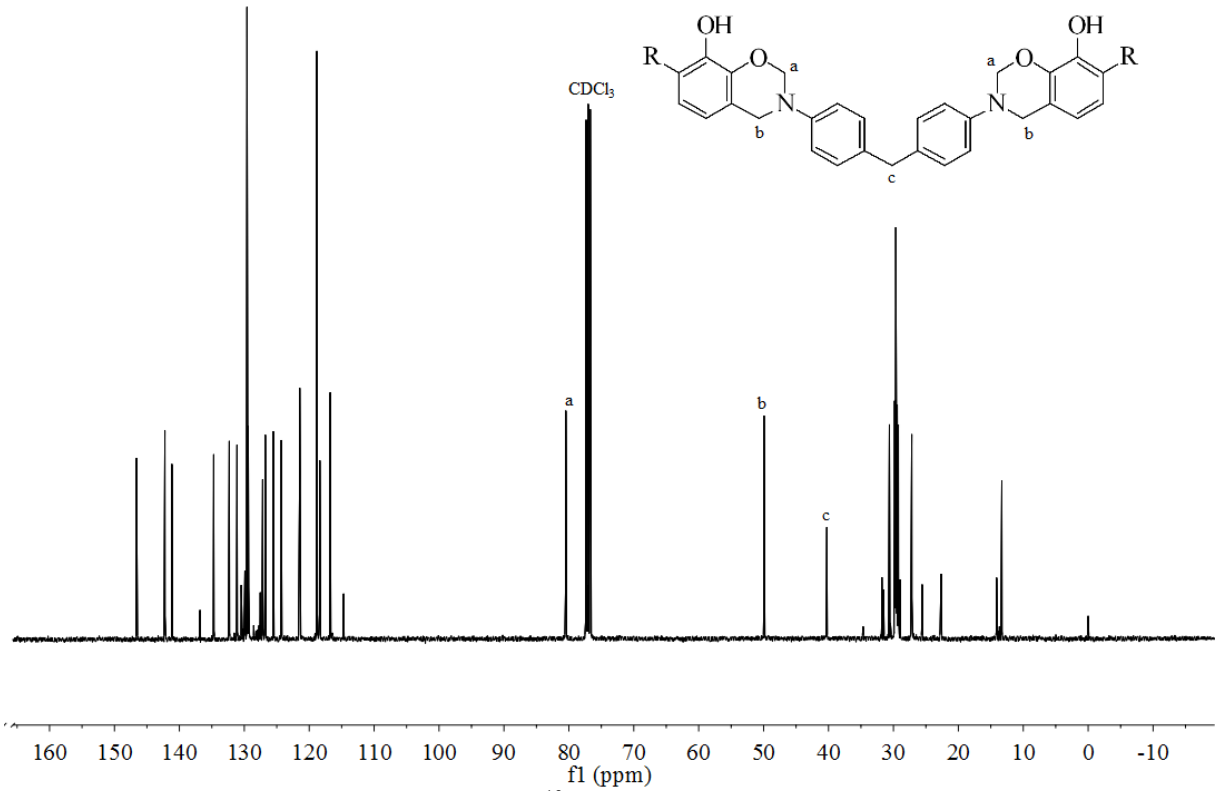

Figure S2. ^{13}C NMR spectrum of U-da.

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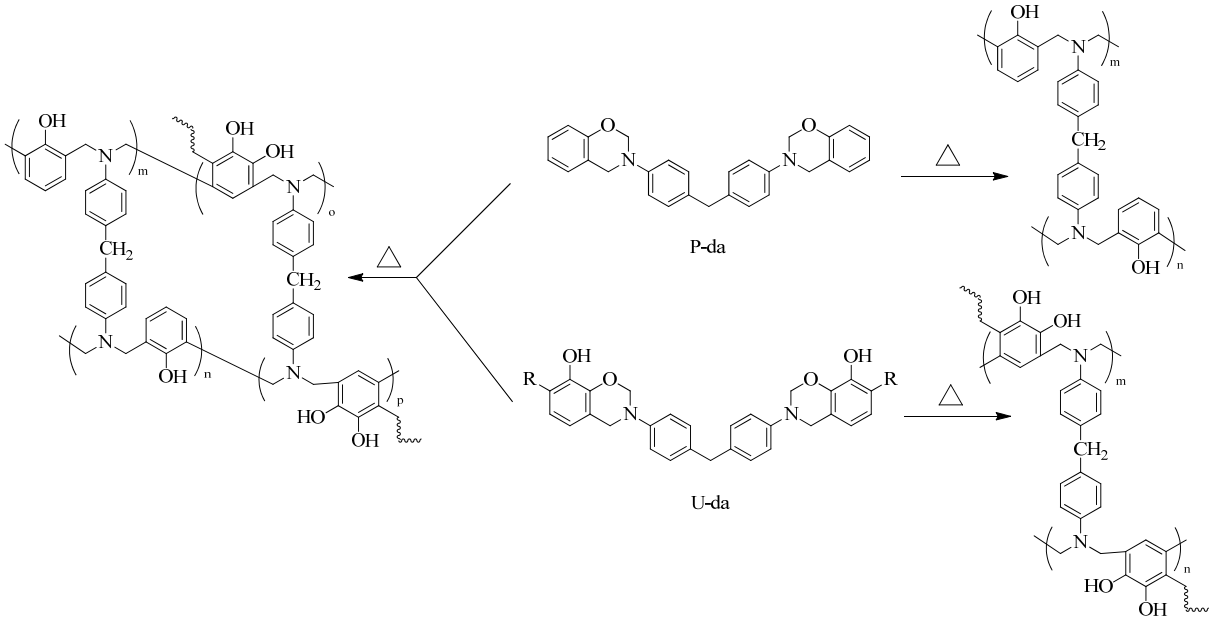
Figure S1 shows the ^{1}H NMR spectrum of U-da. The peaks at 0.75-3.00 ppm are assigned to the alkyl protons in the side chains. The three multiples in the range of 5.60-6.40 ppm are assigned to the protons in -C*H*=C*H*-C*H*=C*H*-. As reported before,[1] the characteristic protons in oxazine ring emerged at 4.53 and 5.34 ppm are assigned to Ar-CH_2-N and O-CH_2-N, respectively. The resonance located at 3.78 ppm is attributed to the methylene protons (Ar-CH_2-Ar). The proton resonance peak of oxazine ring (O-CH_2-N) overlaps with that of hydroxyl. In addition, the integral ratio of the aromatic hydrogen atoms to the hydrogen atoms in oxazine ring or the hydrogens in methylene group agrees well with the theoretical value. Considering that the urushiol is composed of different 3-substitued catechol derivatives with 0-3 olefins in the side chains with very close polarity, the hydrogens in the alkyl side chain can not be calculated exactly by the integral ratio.[2]

Figure S2 shows the ^{13}C NMR spectrum for the U-da, where the peak at 40.25 ppm is assigned to the carbons in Ar-*C*H_2-Ar. The characteristic carbon resonances of the oxazine ring appear at 49.94 ppm for Ar-*C*H_2-N and at 80.47 ppm for N-*C*H_2-O, respectively.



Scheme S1. Synthesis of the hybrid polybenzoxazine.

Reference

1. H. Xu, Z. Lu and G. Zhang, *RSC Advances*, 2012, **2**, 2768-2772.
2. J. Xia, J. Lin, Y. Xu and Q. Chen, *ACS Appl. Mater. Interfaces*, 2011, **3**, 482-489.