

supporting information

Architecture of a hybrid mesoporous chemosensor for Fe³⁺ by covalence coupling Bis-schiff base PMBA onto the CPTES functionalized SBA-15

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Characterization of Bis-Schiff Base PMBA

The ^1H -NMR experiments were performed on a set of Bruker DPX -300 at 298K, and CD_3COCD_3 was used as solvent. ^1H -NMR results of chemical shift (see Figure 1) δ (ppm) at 8.70

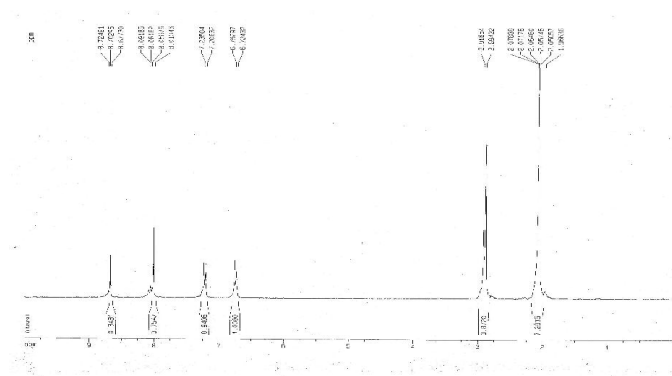


Fig. 1 ^1H -NMR spectra of Bis-Schiff Base PMBA

(s, 2H), 8.06 (m, 4H), 7.22 (d, 4H), 6.74 (d, 4H) and 2.90 (s, 4H) reveal the five kinds of hydrogen in the molecular structure of Bis-Schiff Base PMBA.

The IR spectra were obtained on a Bruker Vector 22 and the sample was mixed with KBr at the ratio of 3:97(w/w) then pressed as thin disc for test. Figure 2 indicates that IR spectrum of Bis-Schiff Base PMBA in the presence of KBr. The IR data (KBr pellets): $\nu_{\max}/\text{cm}^{-1}$ 3435 m (NH_2), 3215, 3310 m ($=\text{C}-\text{H}$ arom), 1615 s ($-\text{CH}=\text{N}-$), 823 vs (CH arom) confirm the $-\text{CH}=\text{N}-$ stretching vibration band at 1615 cm^{-1} that is the characteristic of the Schiff base.

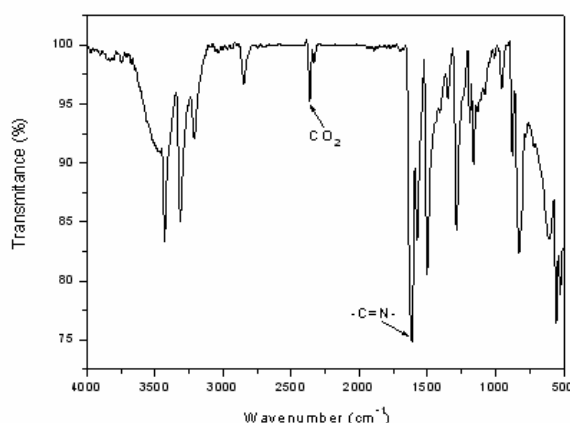


Fig. 2. IR spectrum of Bis-Schiff Base PMBA

The Electrospray ionization mass spectrometry (ESI/MS) of Bis-Schiff base PMBA was

measured by Agilent 1100 Mass Spectrometer in methanol solutions. The results of ESI/MS in Figure 3 indicates that a maximum $[M+H]^+$ peak of Bis-Schiff base PMBA at m/z 315.1 is observed. Thus, the ESI/MS confirmed the molar weight of PMBA (close to the calculated value is 314.28).



Fig. 3 Electrospray ionization mass spectrometry (ESI/MS) of pure Bis-Schiff Base PMBA

Chemical analysis (C H N) of Bis-Schiff Base PMBA were carried out in a CHN-O-Rapid (Germany) element analyzer. EA results indicate that the measured contents of (C H N) C 76.07%, H 5.59%, and N 17.43% are almost equivalent to the calculated values (C 76.41%, H 5.77%, N 17.82%) in the structure of PMBA. ESI-MS spectrum indicates that. The molecular weight of Bis-Schiff base is 314.1 measured by ESI-MS