Supporting information

Make Pyrophosphate Visible: The First Precipitable and Real-time Fluorescent Sensor for Pyrophosphate in HEPES buffer Medium

Contents

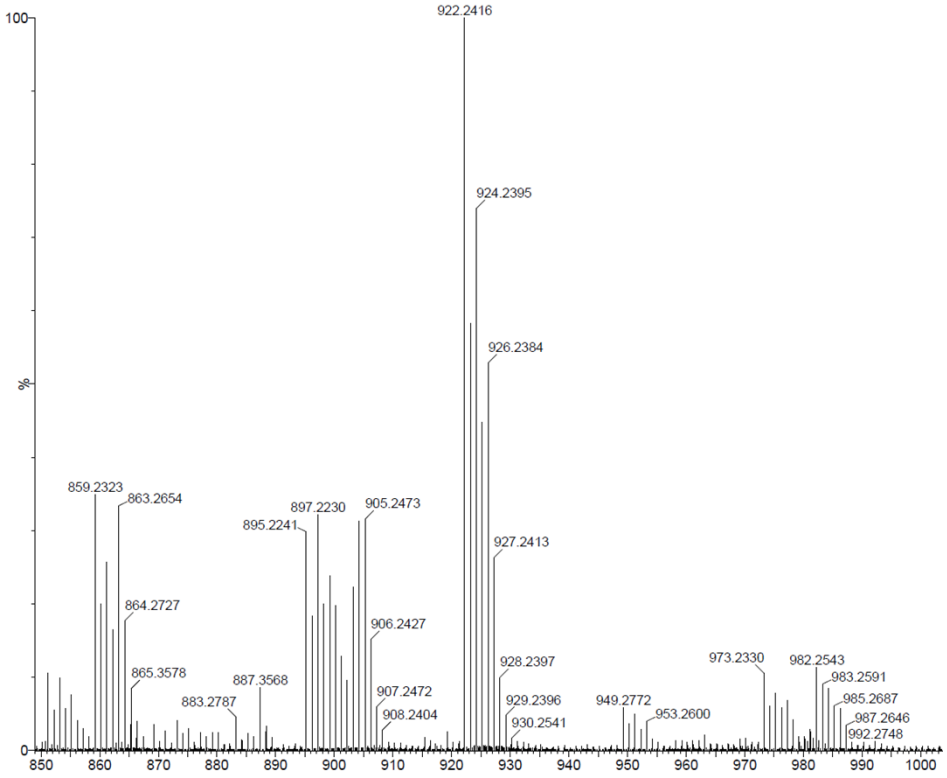


Fig. S1 HRMS for **R1-Zn(II)** complex.

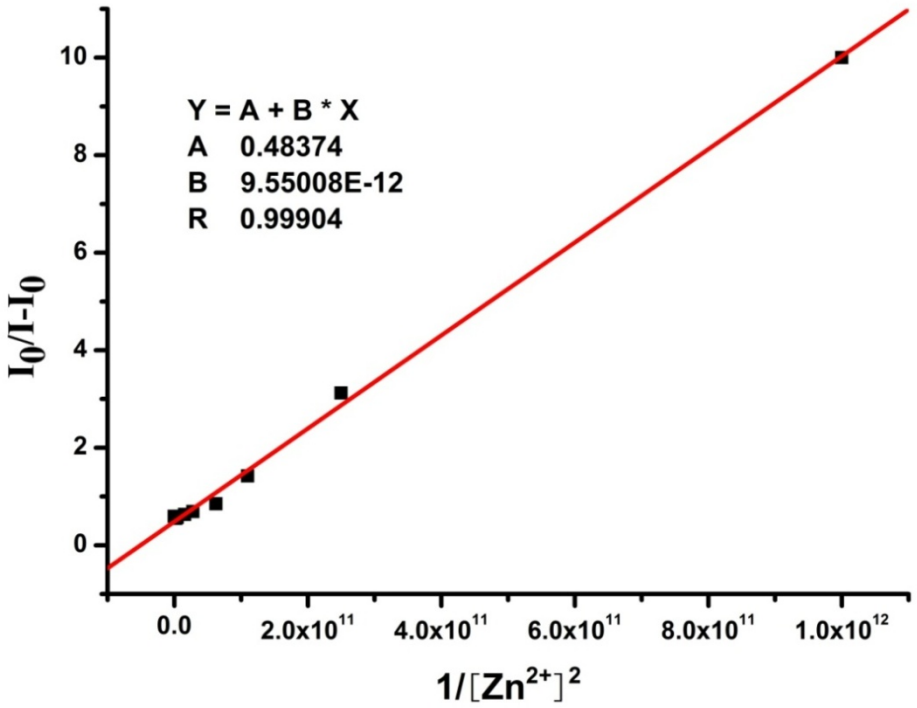


Fig. S2 The binding constant of **R1** with Zn^{2+} by using the linear Benesi-Hildebrand expression (The binding constant of R1-Zn(Ⅱ) with PPi by using the linear Benesi-Hildebrand equation $I_0/I-I_0$= b/a-b {1/K[M]^2+1} K=A/B =5.06×$10^{10}M^{-2}$)

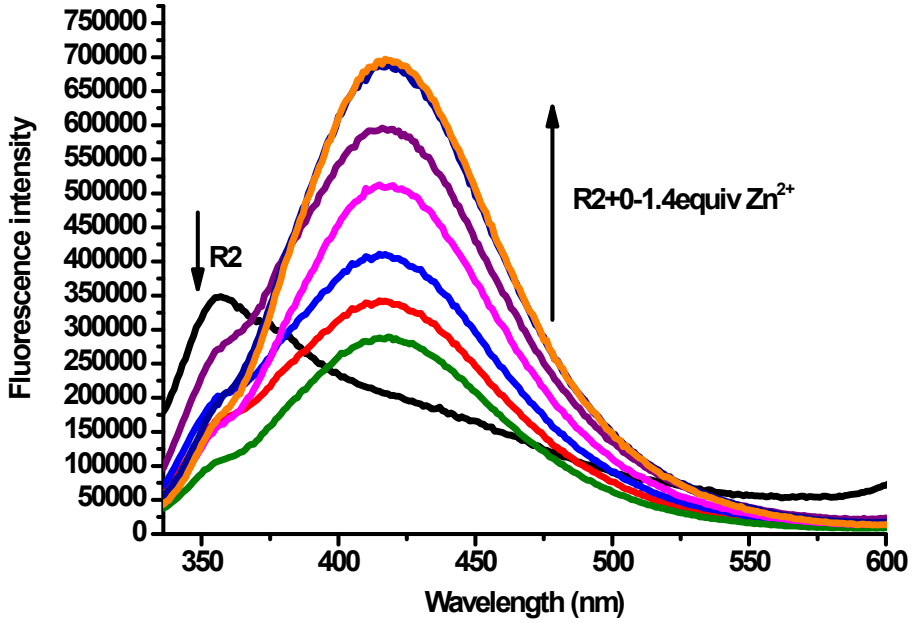


Fig.S3 The fluorescence response of **R2** towards Zn^{2+}

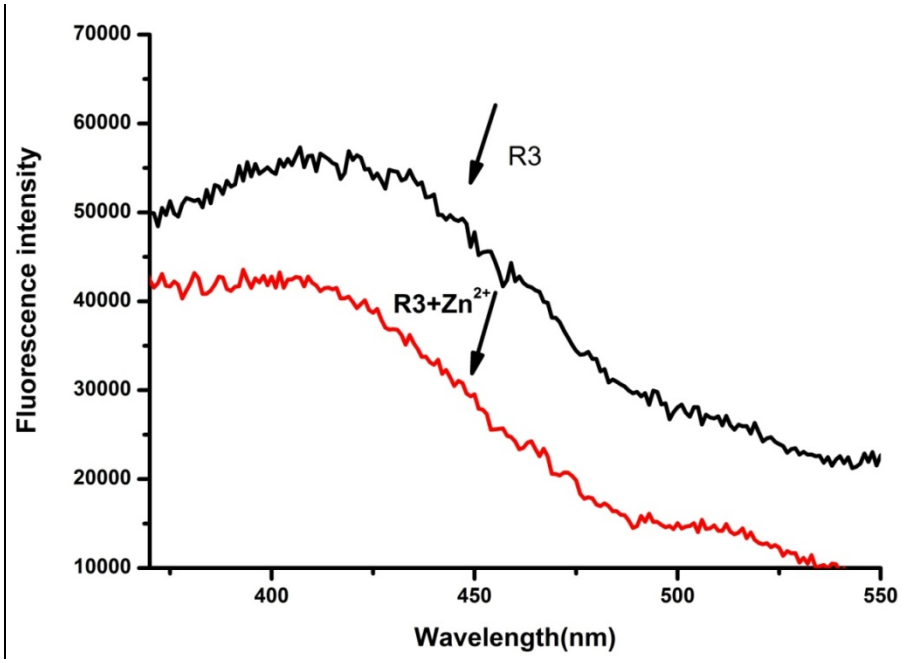


Fig.S4 The fluorescence response of **R3** towards Zn^{2+}

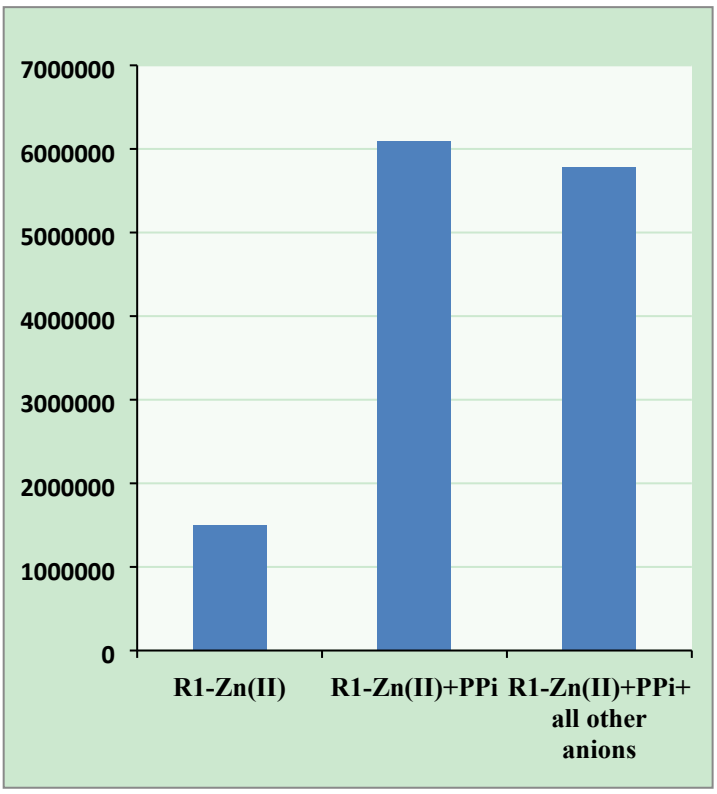


Fig.S5 The fluorescence intensity of mixing (**R1-Zn^{2+}**) + PPi + (tested anions all together). Test anions: F^-, SCN^-, $H_2PO_4^-$, HCO_3^-, Br^-, PO_4^{3-}, NO_3^-, AcO^-, Citrate, I^-, N_3^-, SO_4^{2-} (50 μM).

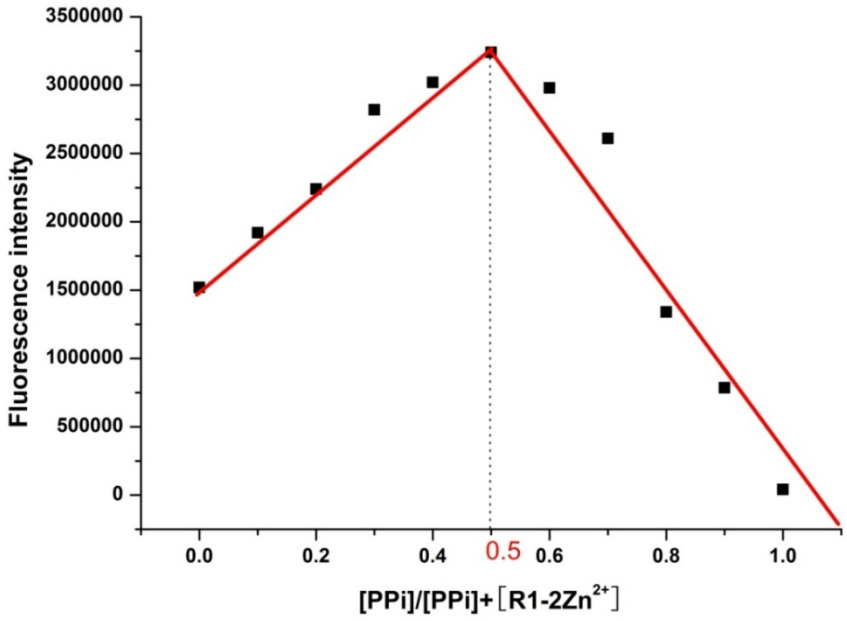
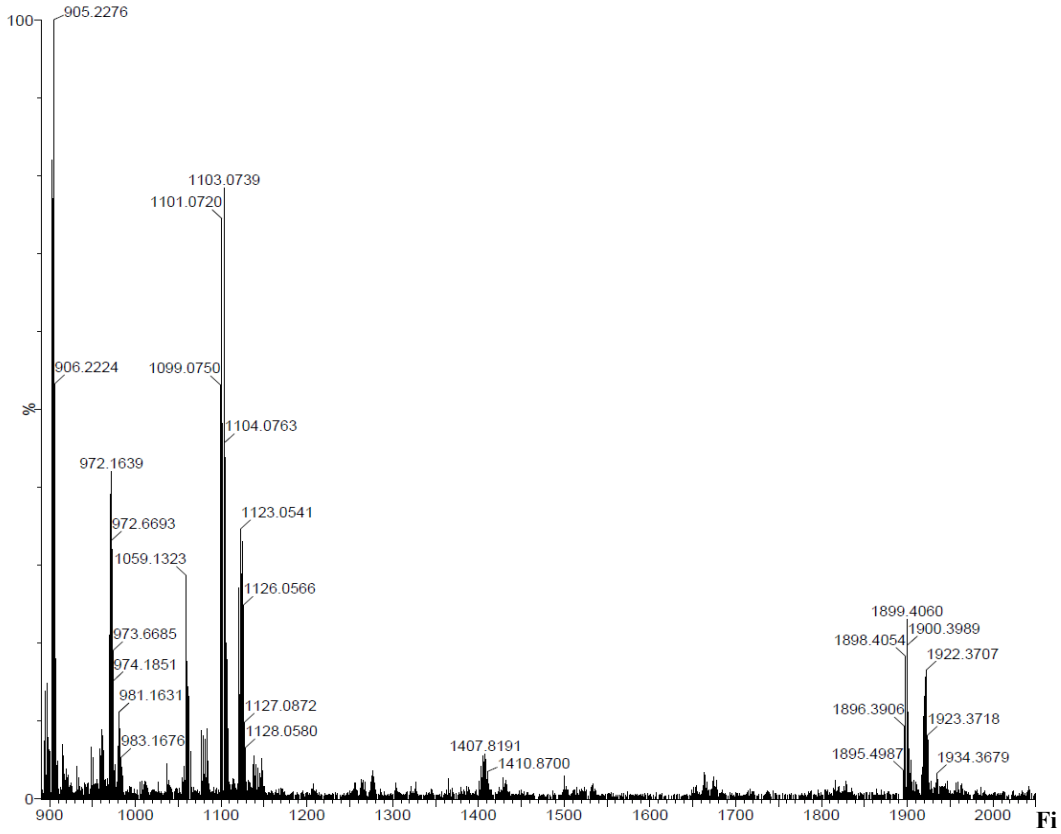


Fig.S6 Job's plot obtained from the fluorescent titration of R1-Zn(II) with PPi in HEPES, the total concentration is 10 μM.



g.S7 The HRMS of R1-Zn(II) and PPi (the precipitate).

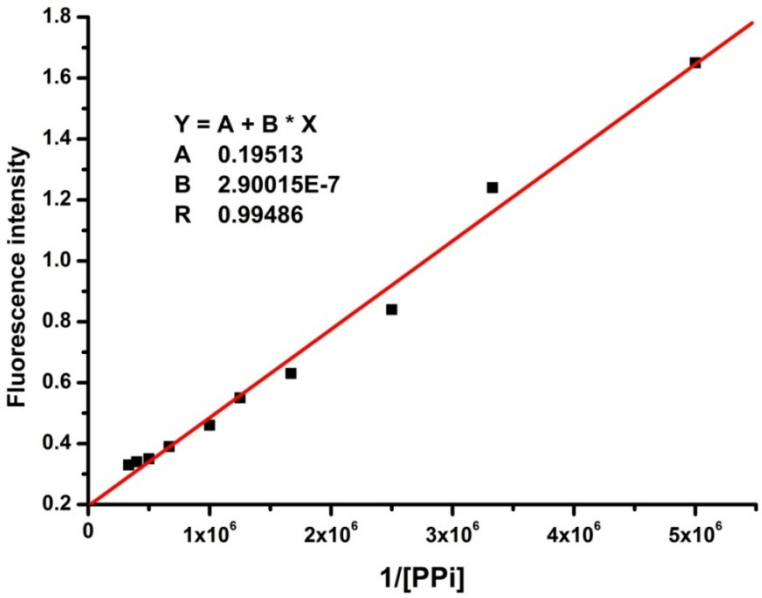


Fig.S8 The binding constant of R1-Zn(II) with PPi by using the linear Benesi-Hildebrand and expression (The binding constant of R1-2Zn^{2+} with PPi by using the linear Benesi-Hildebrand expression: $I_0/I-I_0$= b/a-b {1/K[M] +1} ,K=A/B= $6.7\times10^5 M^{-1}$).

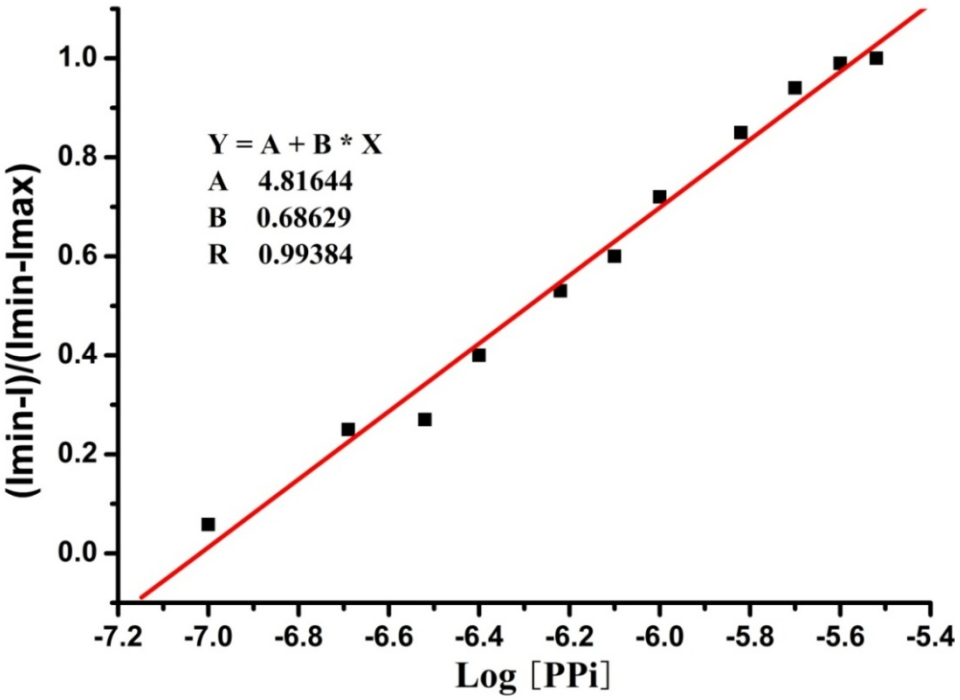


Fig.S9 The determination R1-Zn(II) of the detection limit (LOD) for PPi in HEPES buffer (10 mM, pH =7.4)

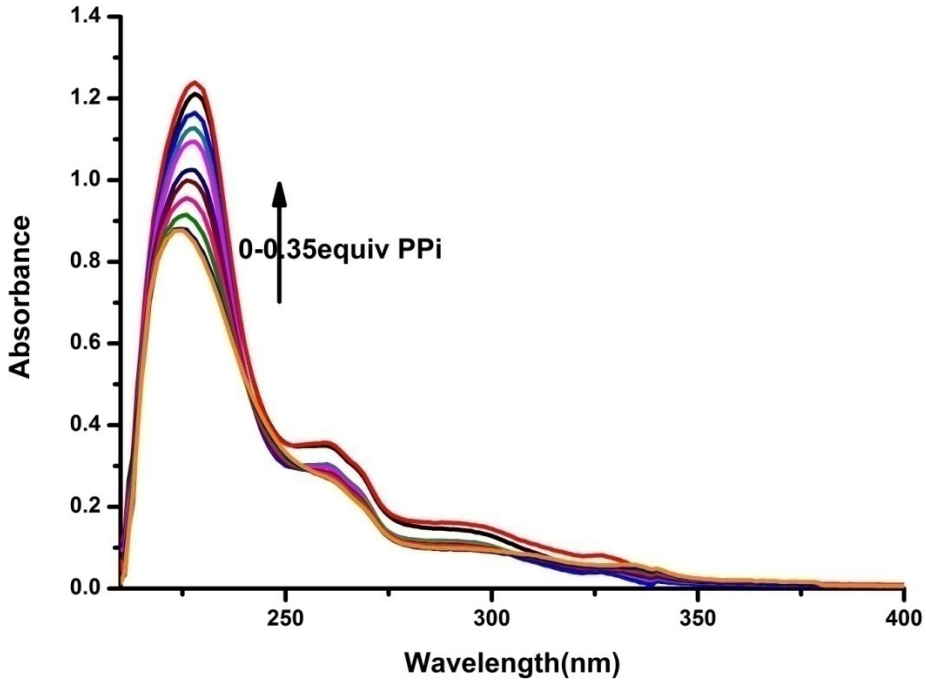
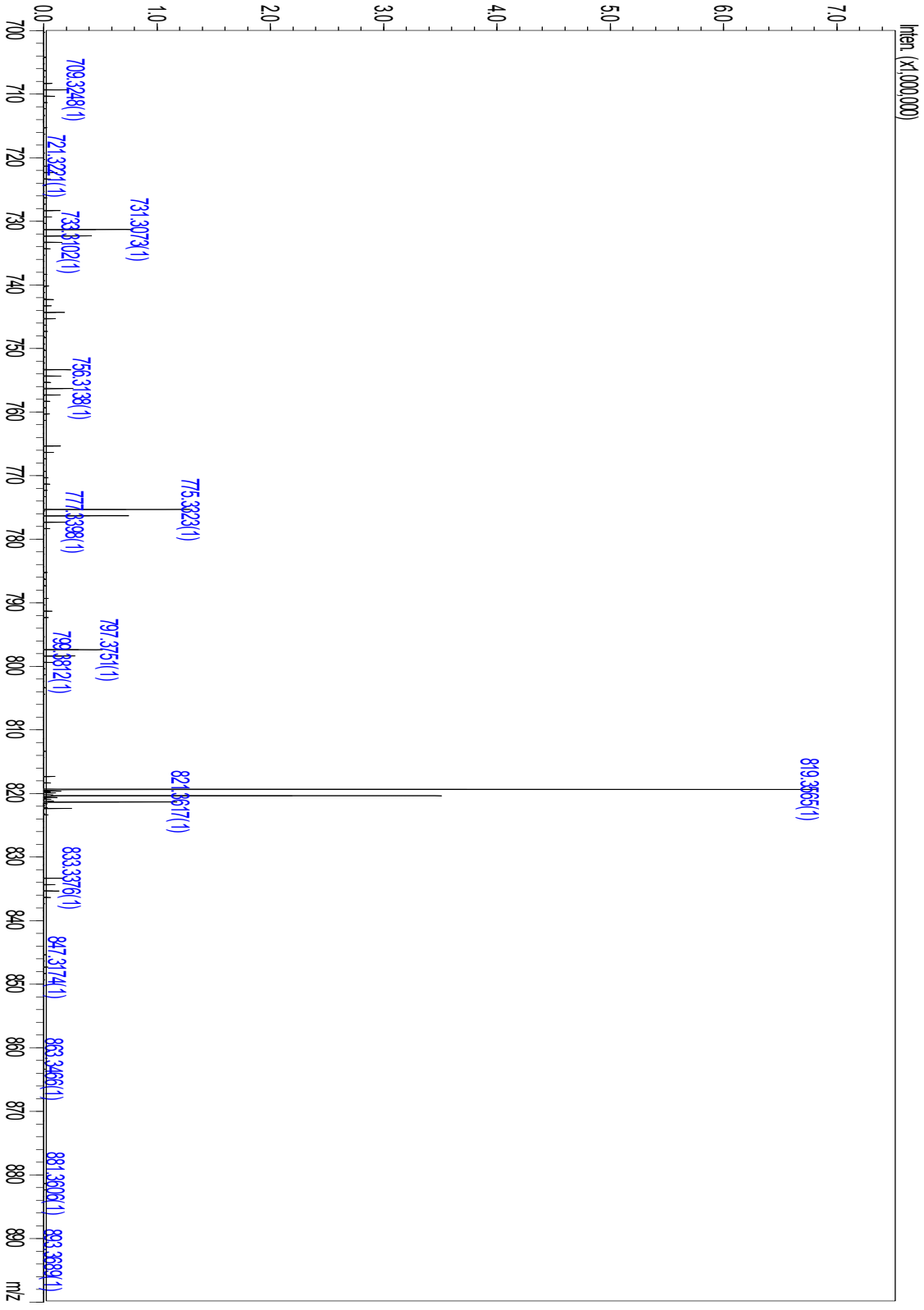


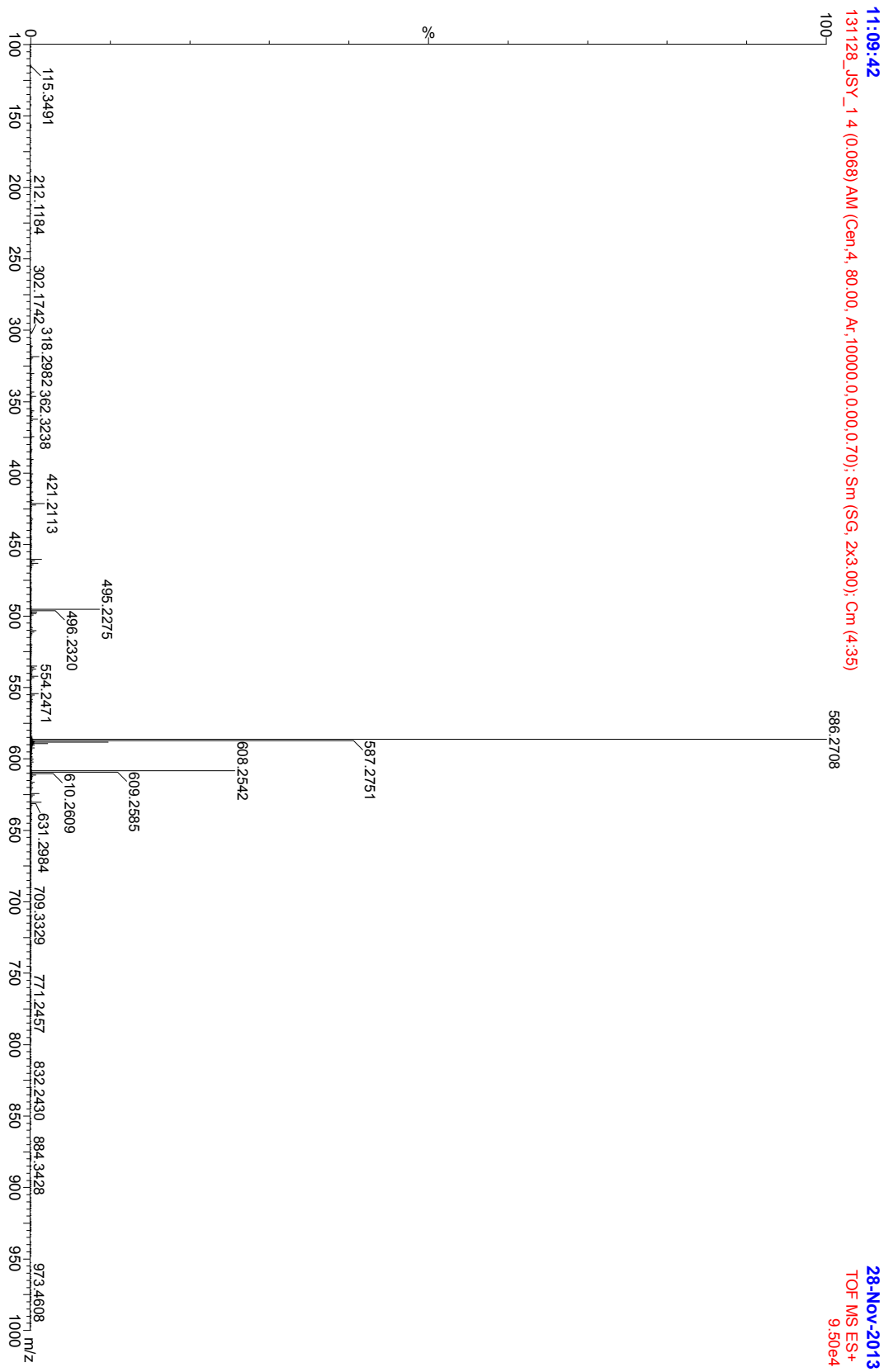
Fig.S10 Absorption spectra of during the titration R1-Zn(II) with PPi (0-0.35 equiv) in HEPES (10 mM, pH = 7.4)

1. ^{1}H-NMR, ^{13}C-NMR and HRMS spectra of R1/R2/R3 and intermediates.

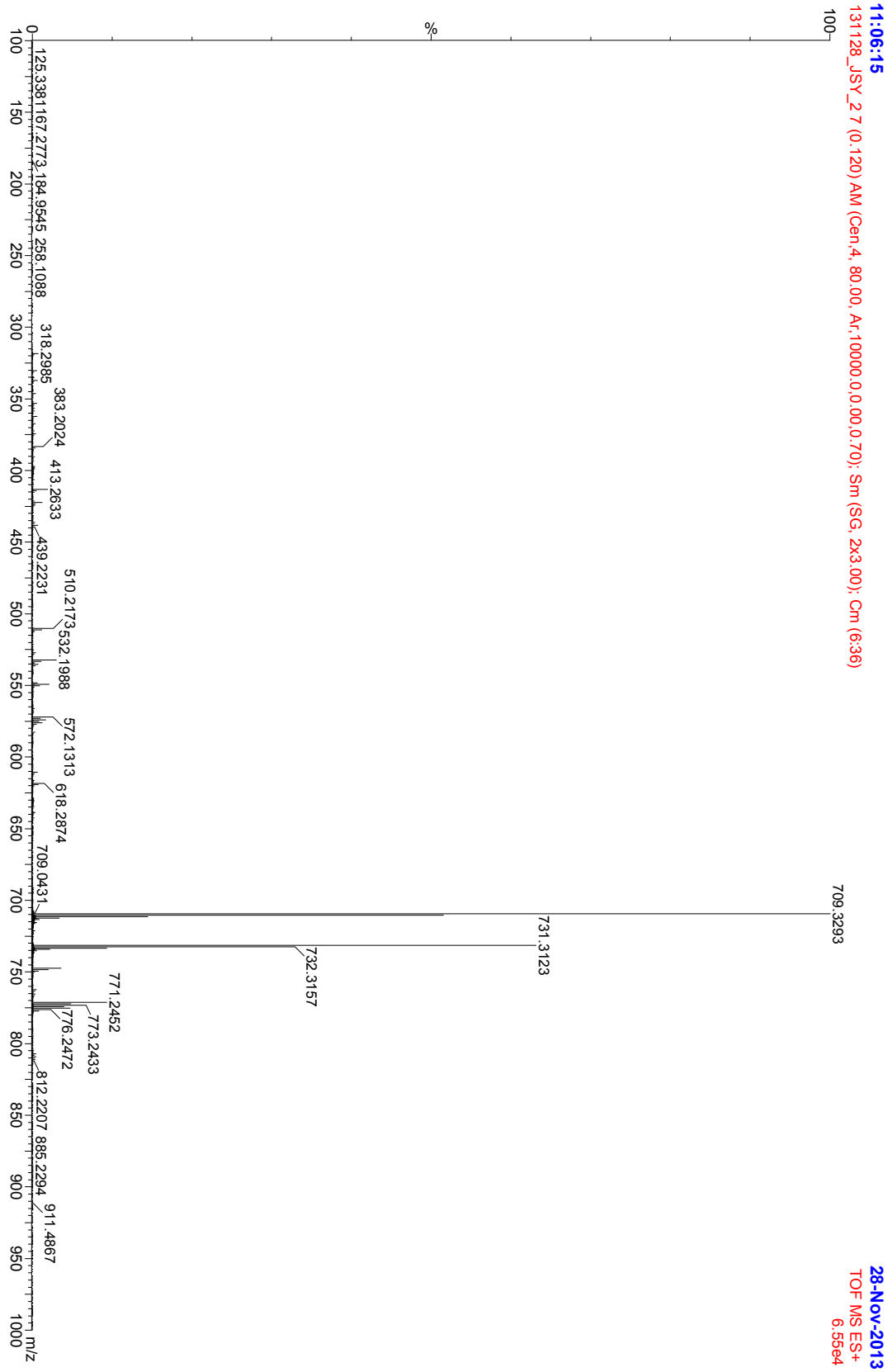
1.1 The HRMS of R1



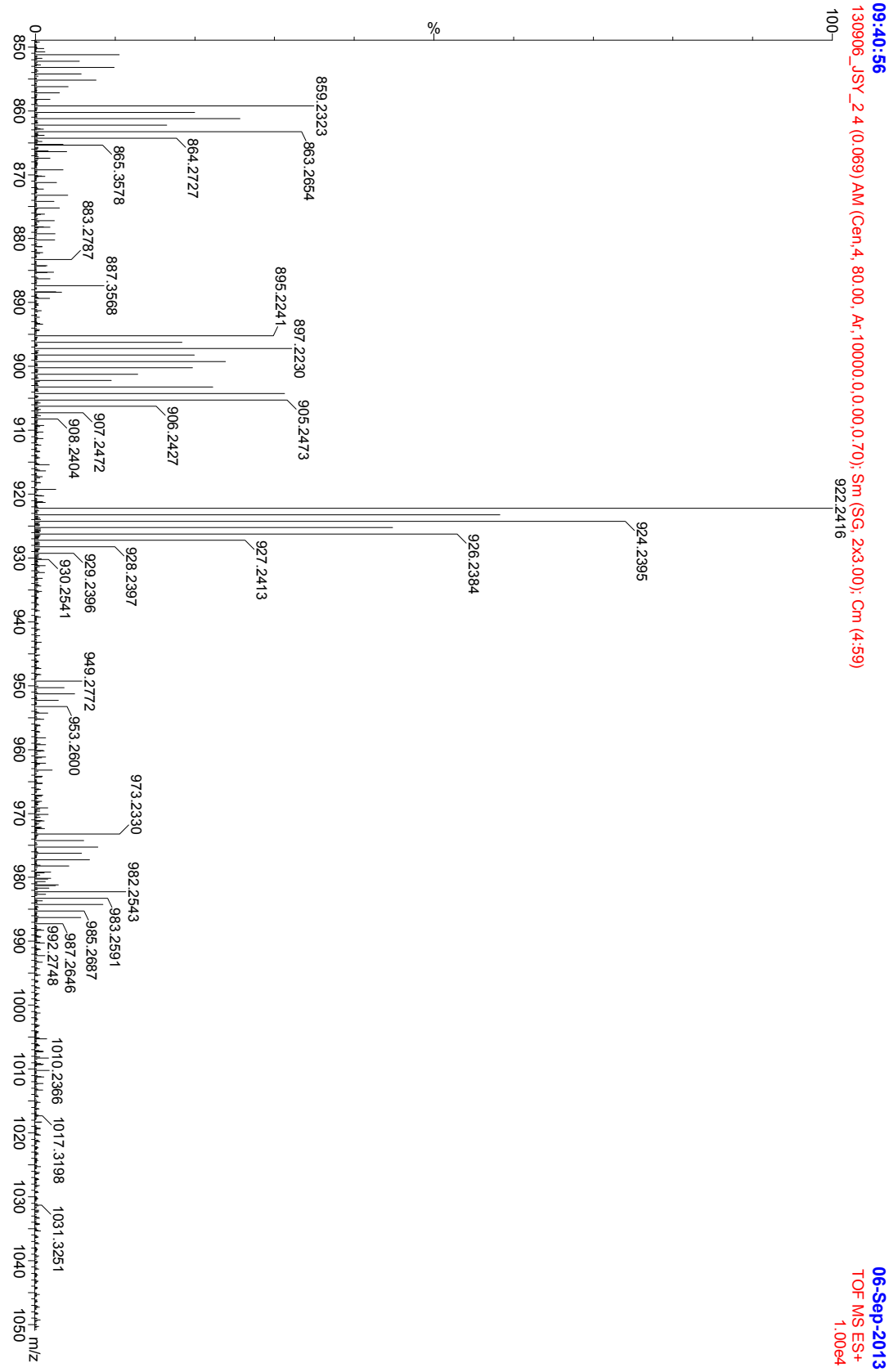
2.2 The HRMS of R2



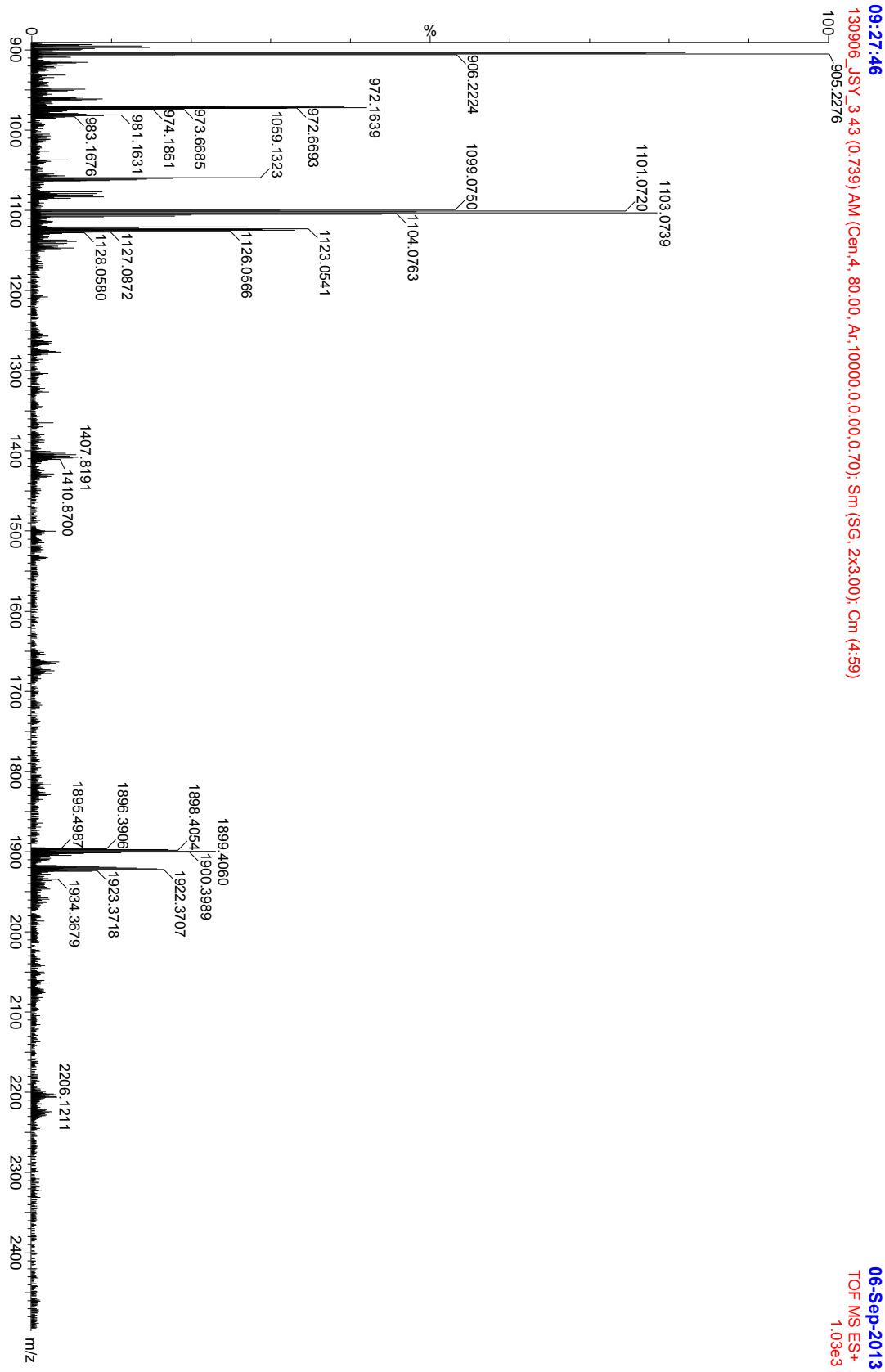
2.3 The HRMS of R3+H$^+$



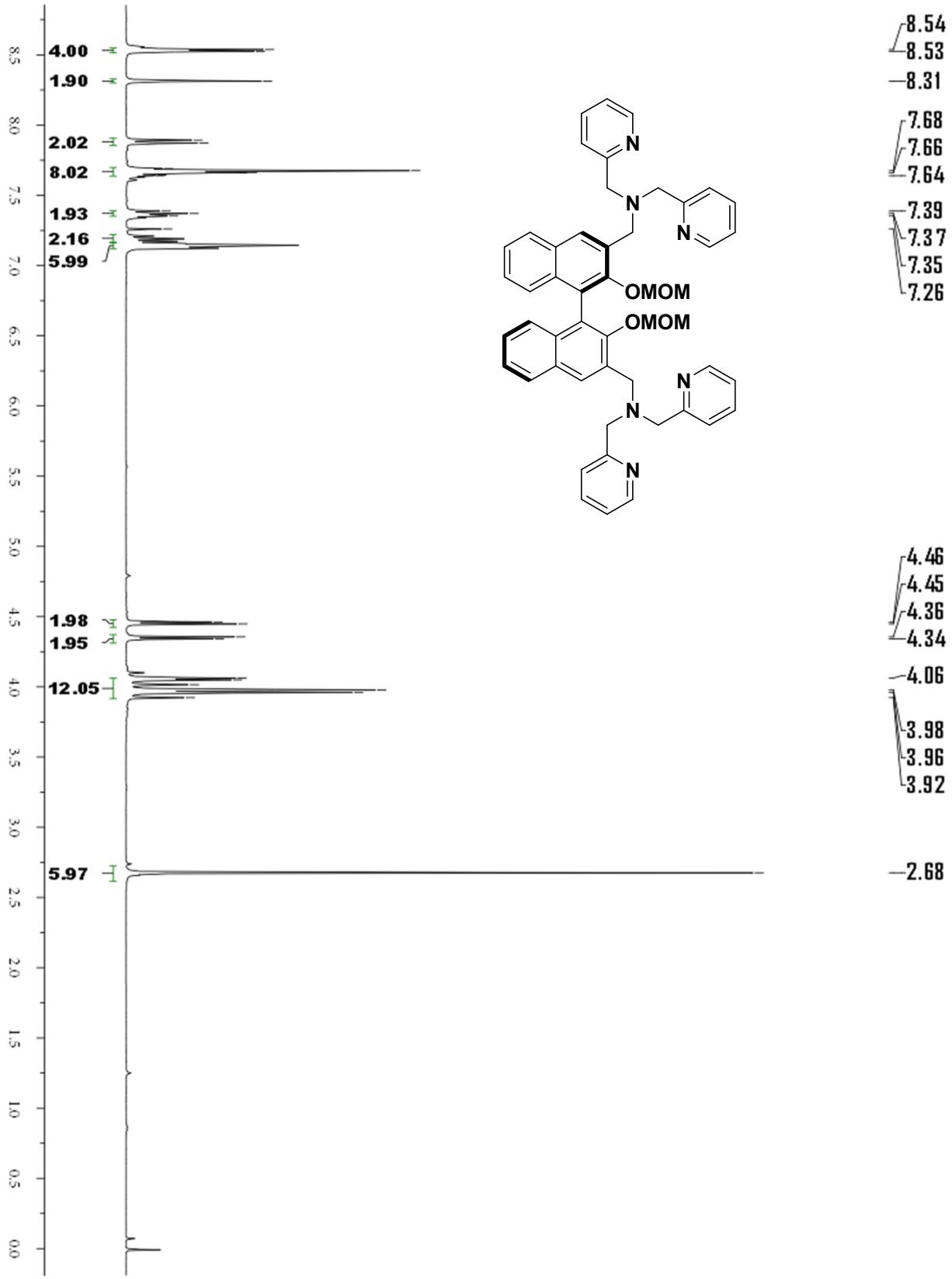
2.4 The HRMS of R1-Zn(II)



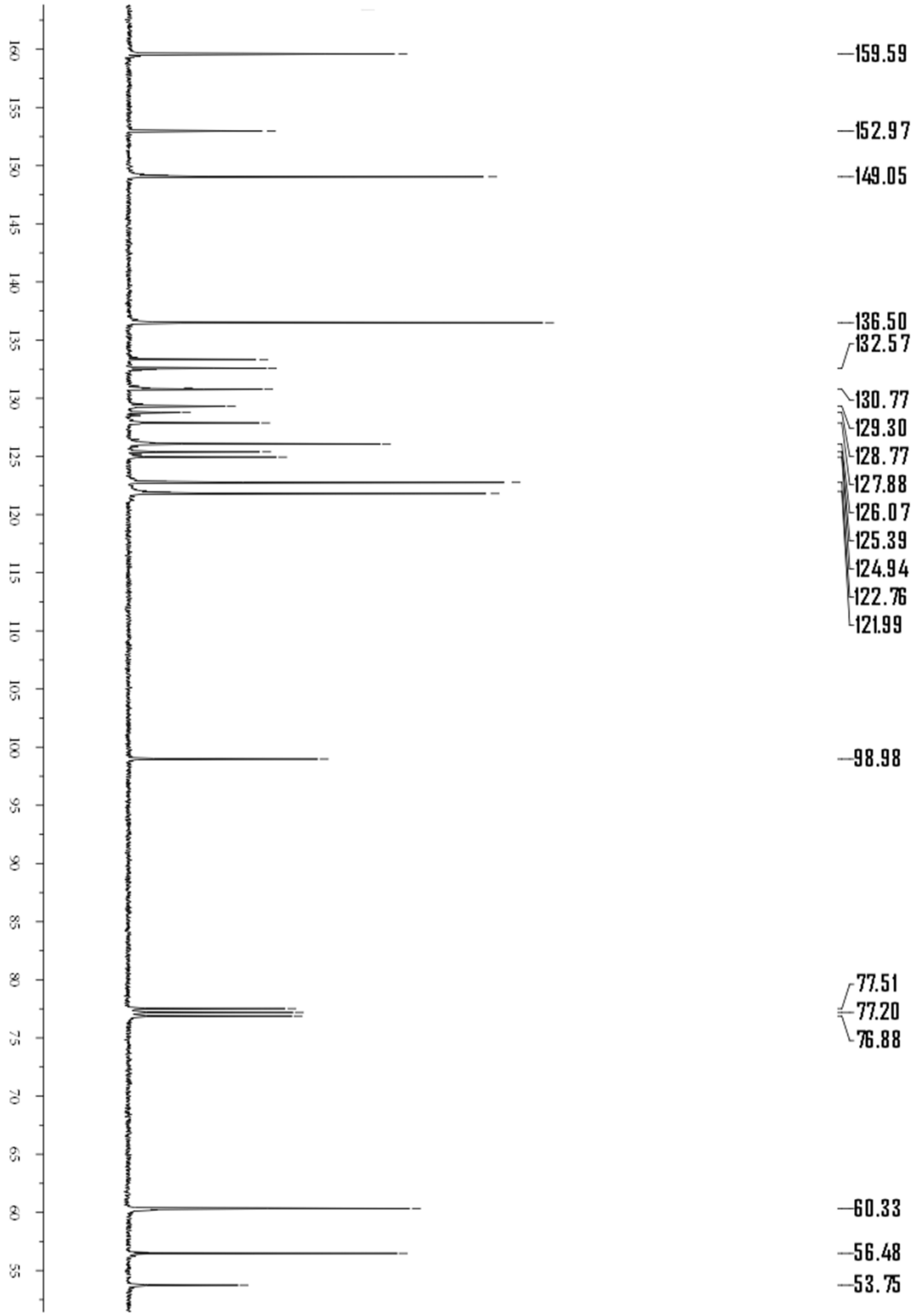
2.5 The HRMS of R1-Zn(II)-$P_2O_7^{4-}$+Na^+-2H^+



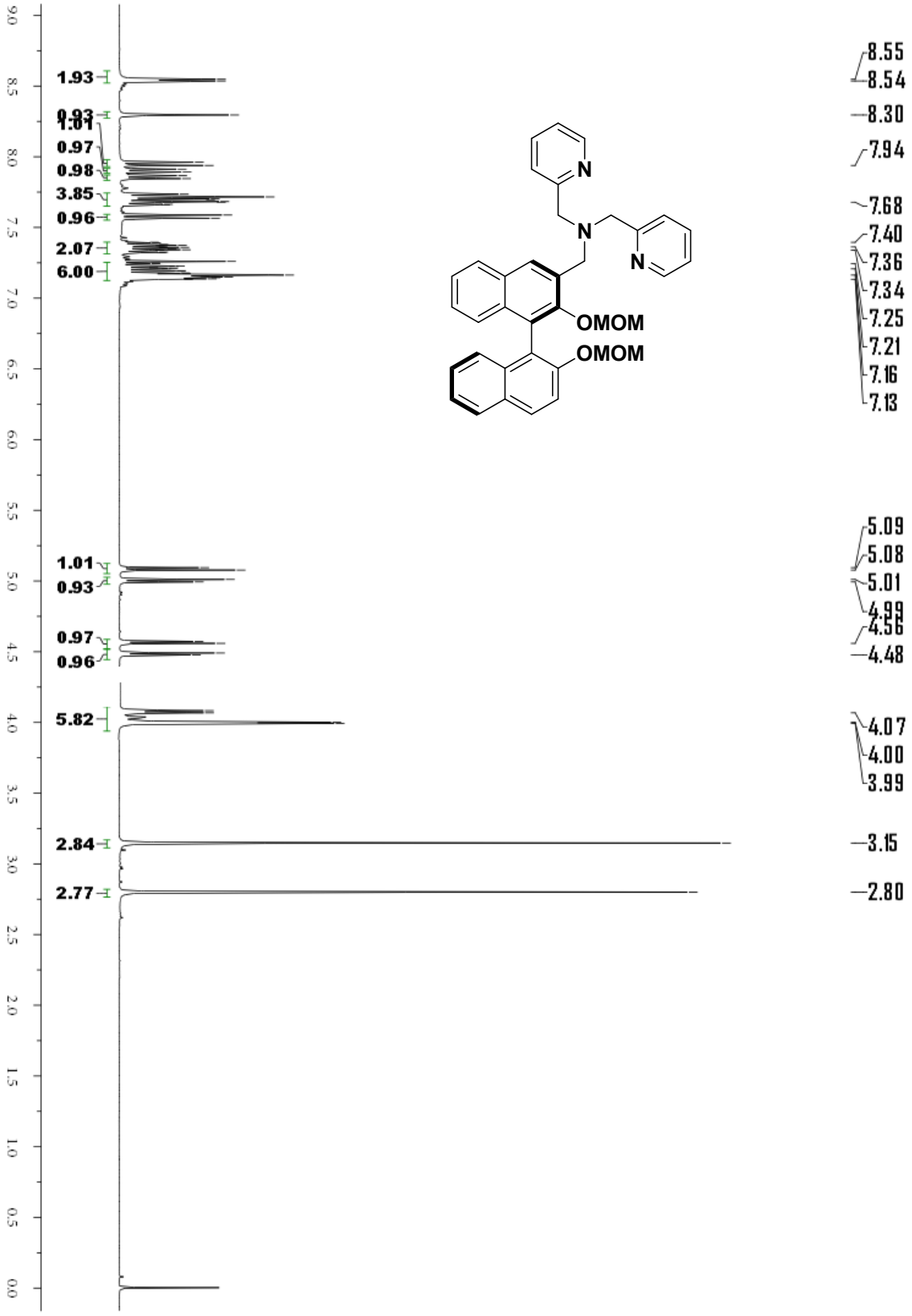
2.6 ^{1}H-NMR of R1



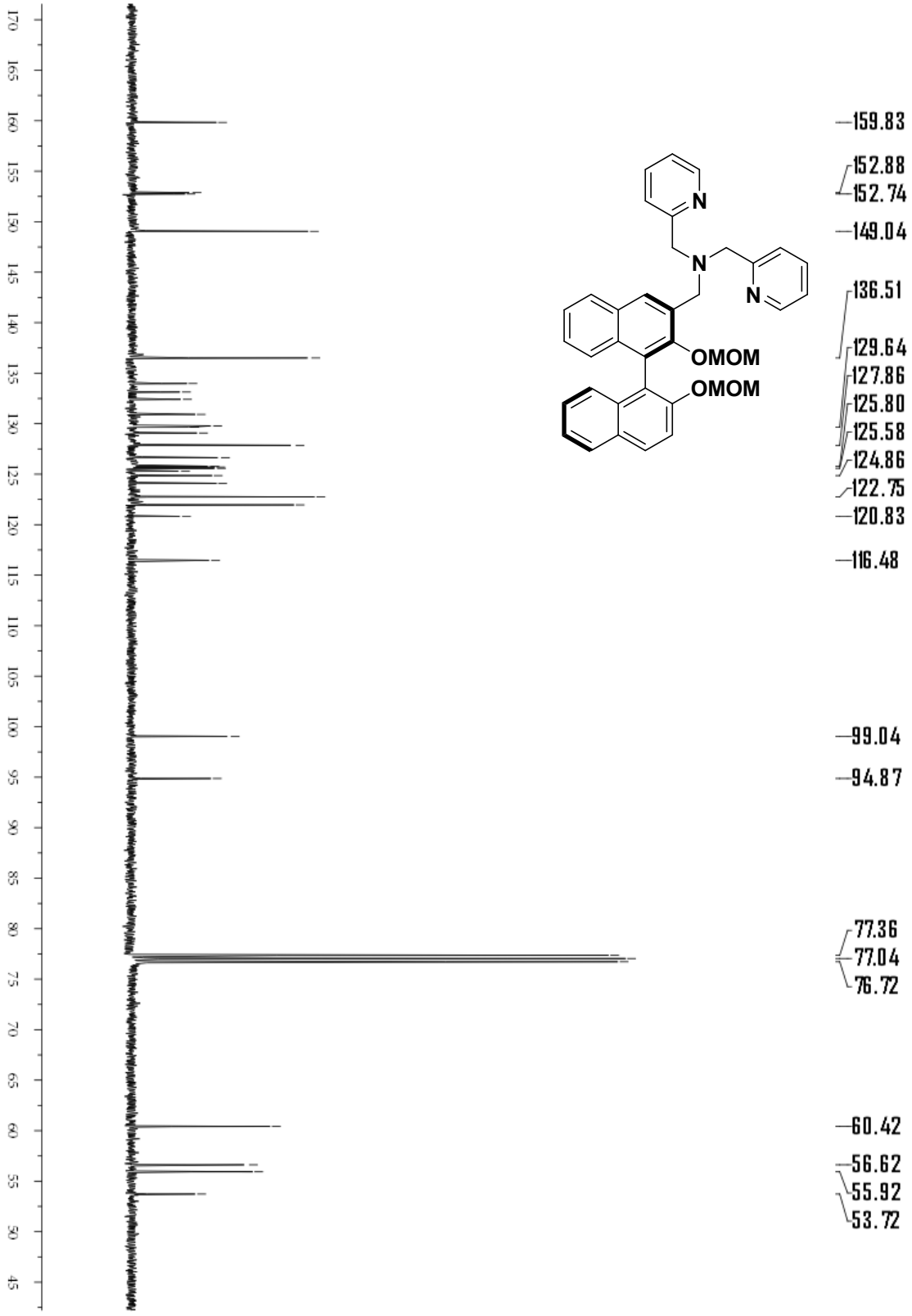
2.7 ^{13}C-NMR of R1



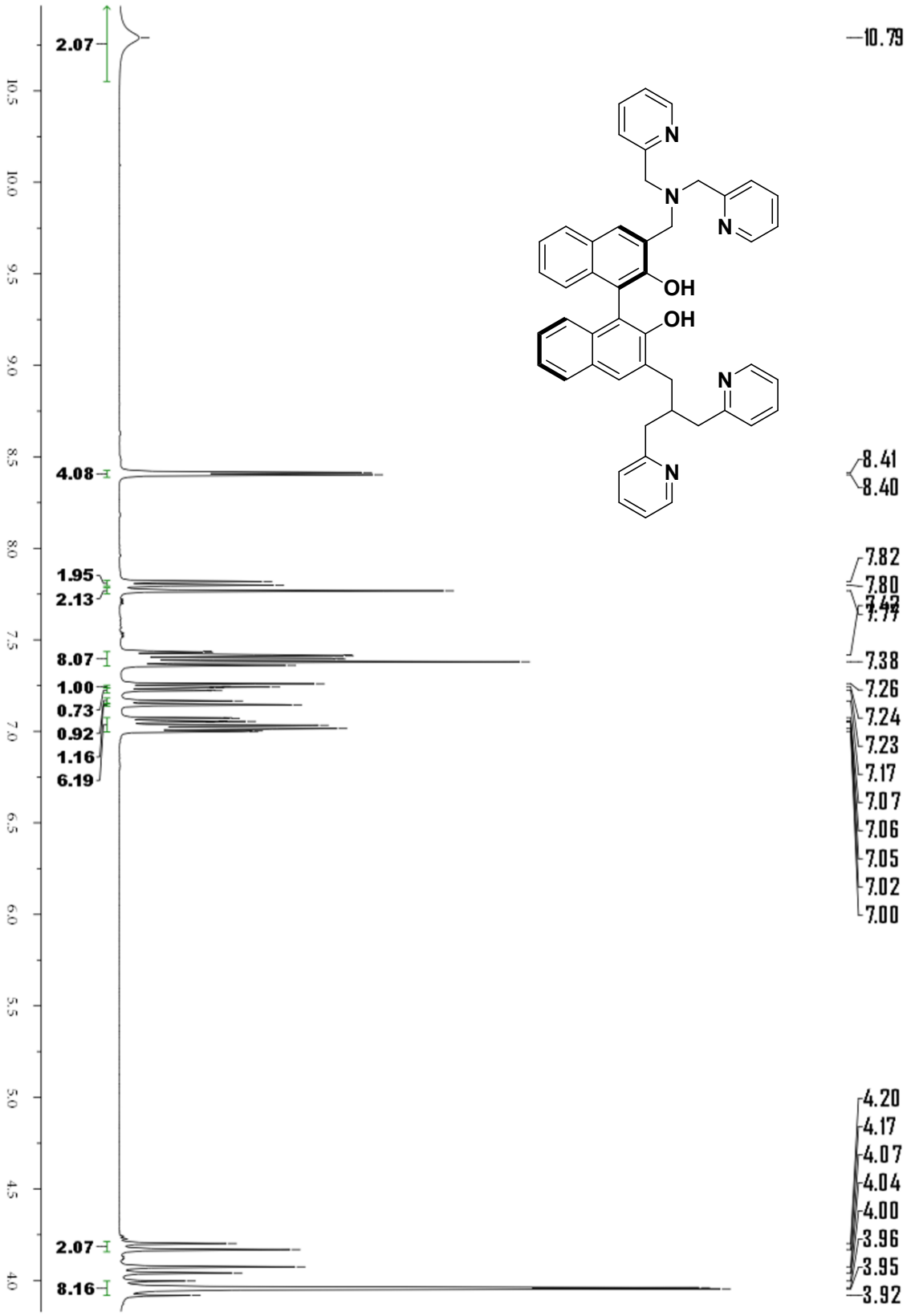
2.8 ^{1}H-NMR of R2



2.9 ^{13}C-NMR of R2



2.10 ^{1}H-NMR of R3



2.11 ^{13}C-NMR of R3