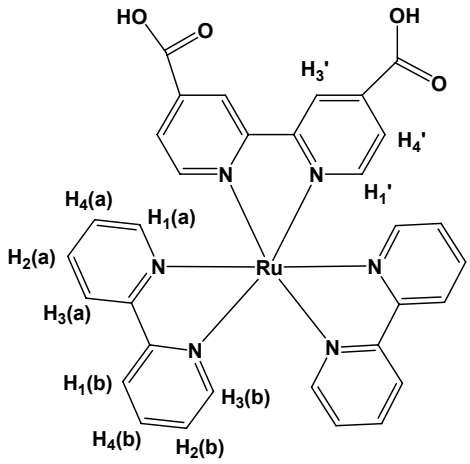
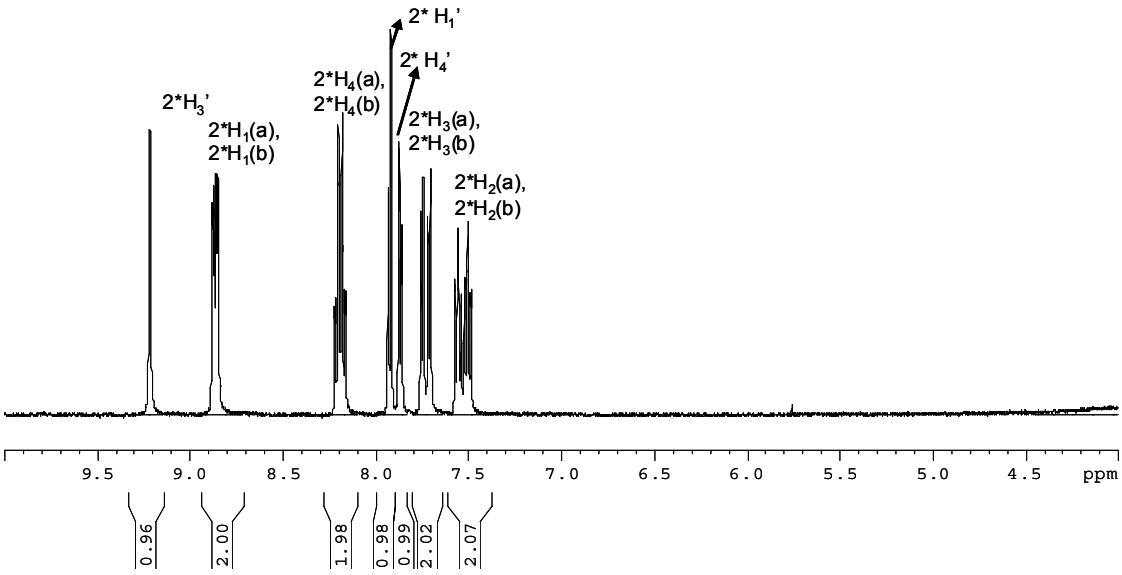
Supporting information:

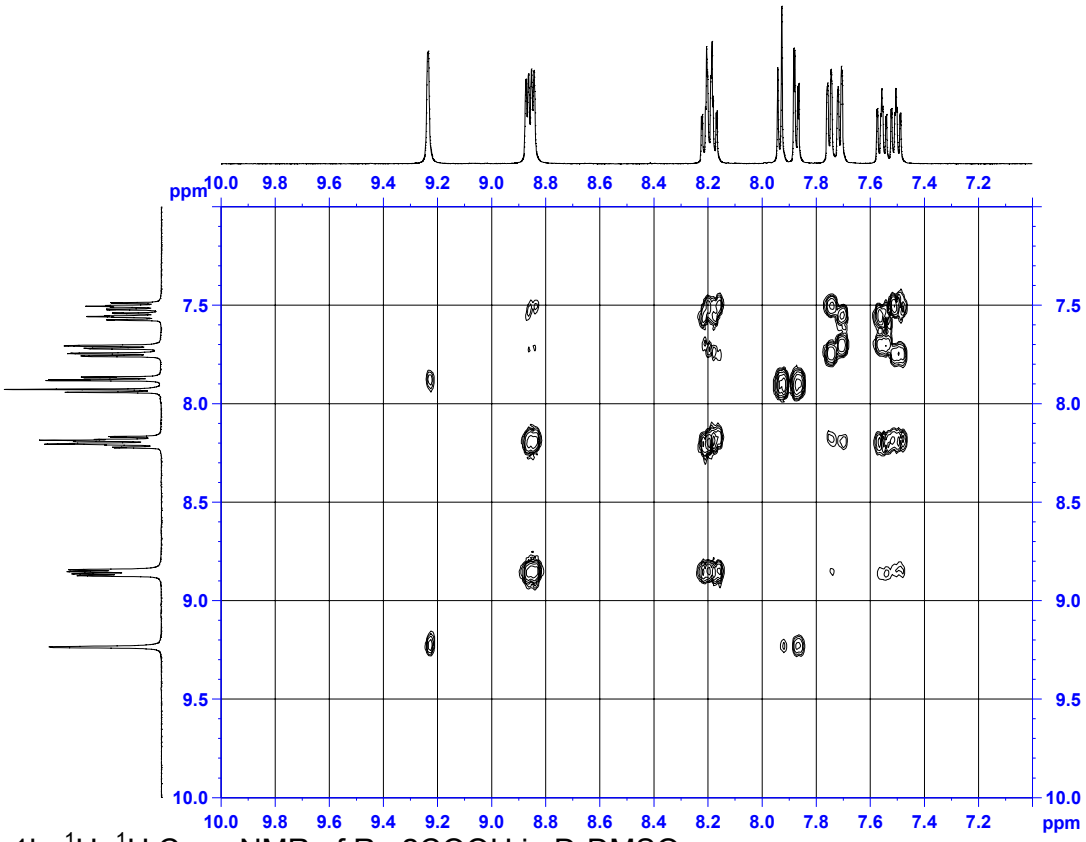
$^1$H-NMR and $^1$H-$^1$H Cosy-NMR of Ru2COOH, Ru2mono and Ru1mono in D-DMSO listed is used to confirm the structure of molecule. The typical hydrogen in the molecular structures is related to the ones in NMR spectrum. According to $^1$H-$^1$H Cosy-NMR, we can readily see the coupling interaction between the different hydrogen.



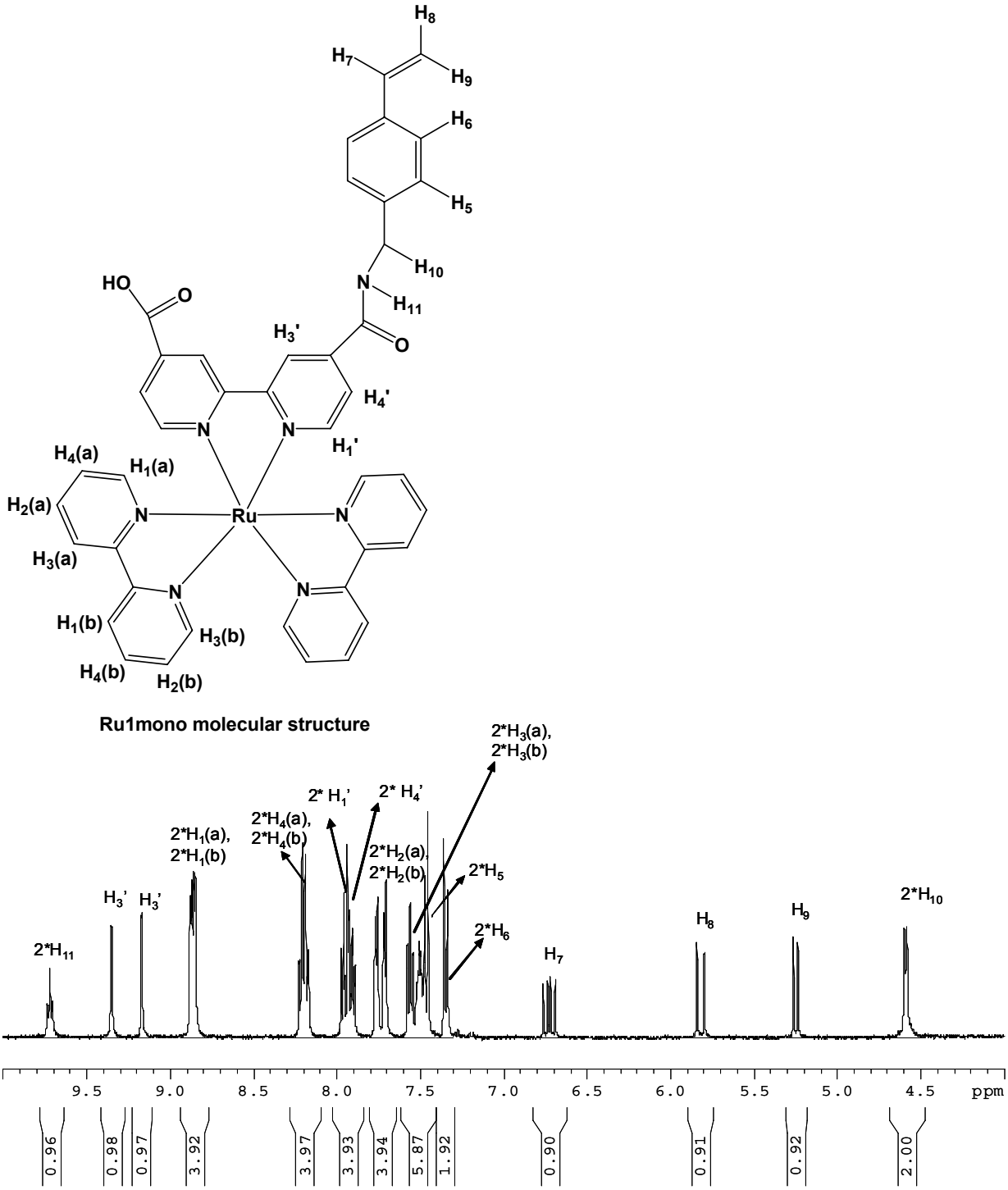

**Ru2COOH molecular structure**



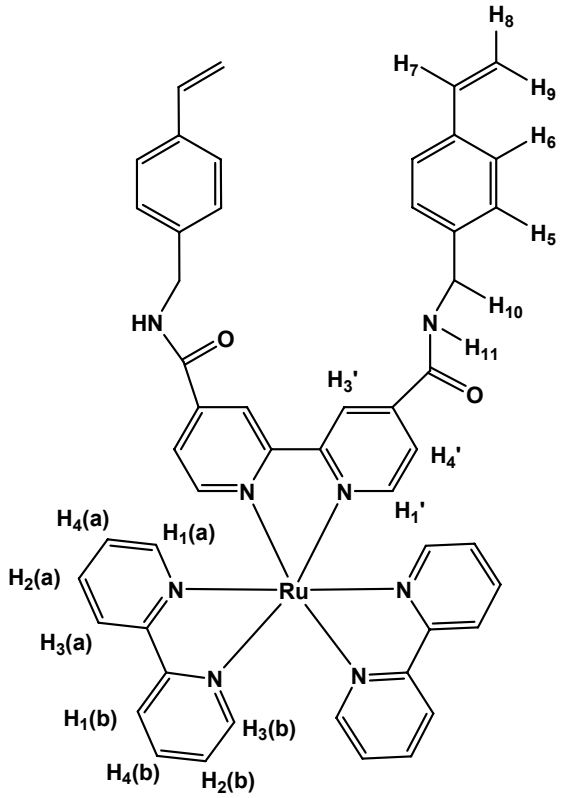

1a. $^1$H-NMR of Ru 2COOH in D-DMSO



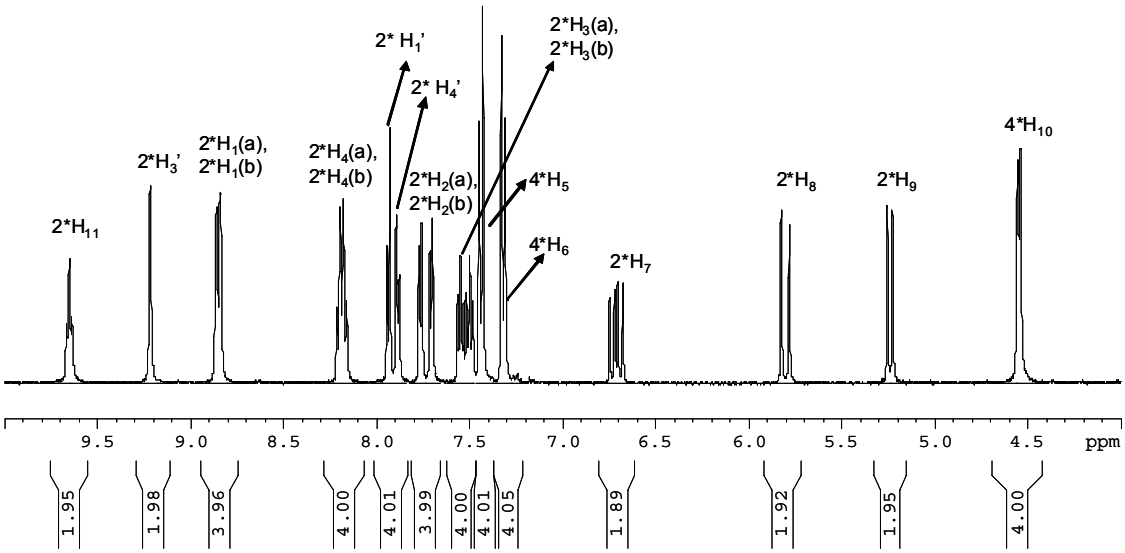

1b. $^{1}H$–$^{1}H$ Cosy-NMR of Ru 2COOH in D-DMSO



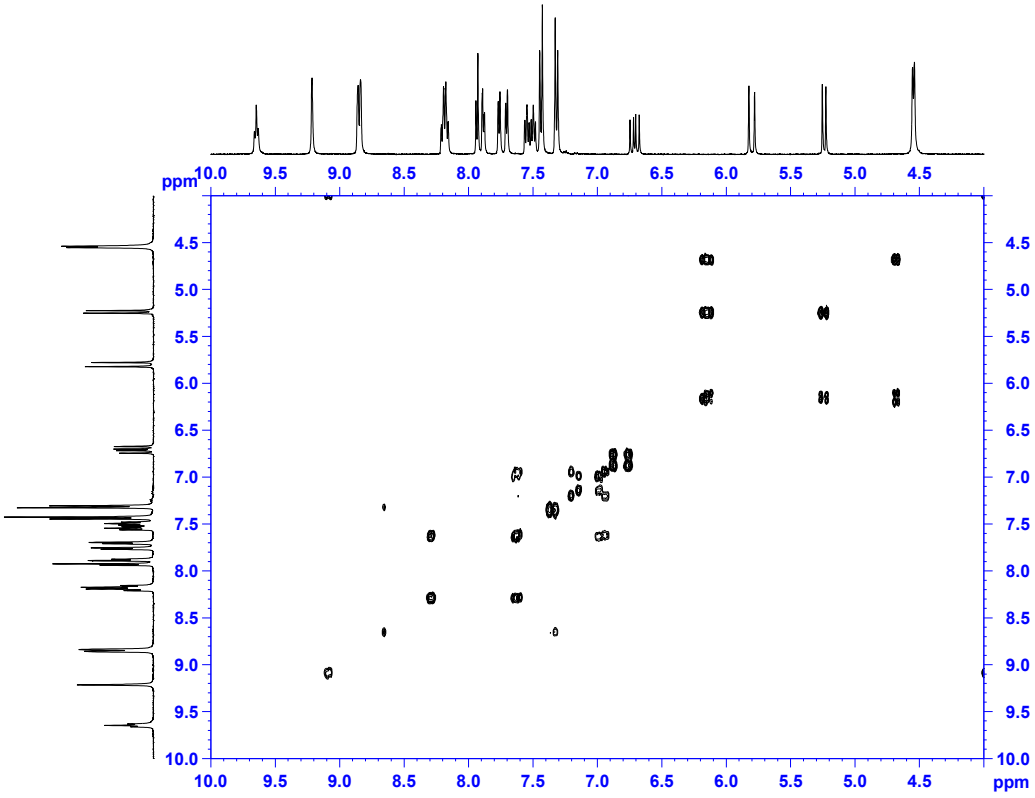

1c. $^{1}$H-NMR of Ru1mono in D-DMSO



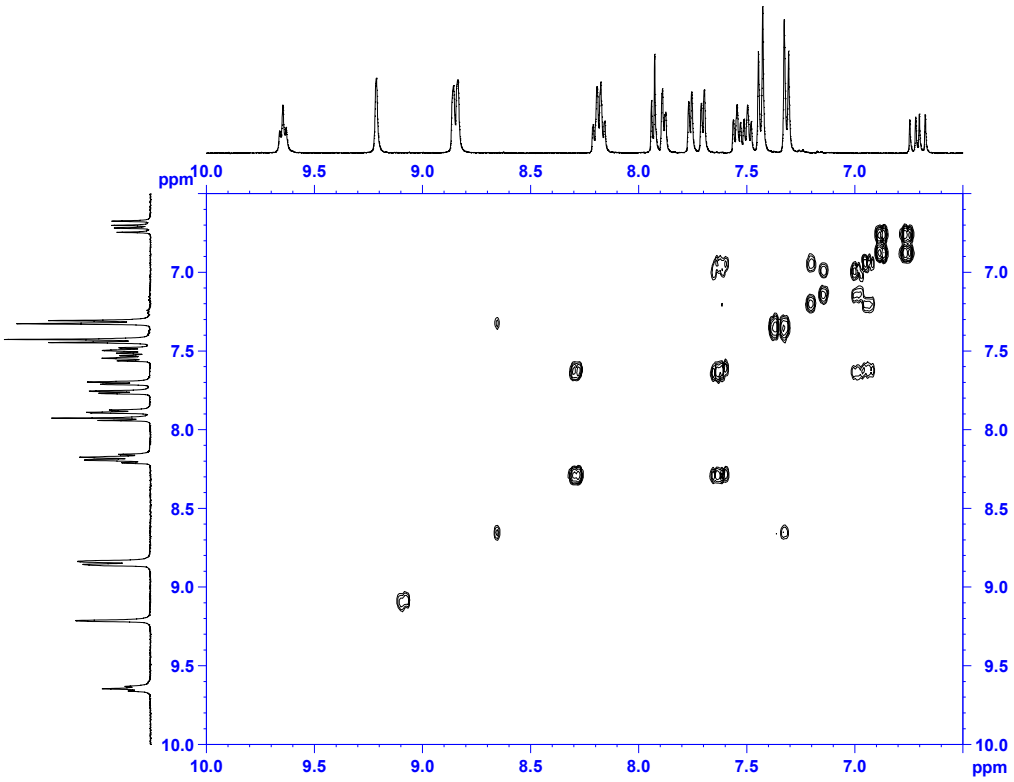

**Ru2mono molecular structure**




1d. $^{1}$H-NMR of Ru2mono in D-DMSO




1e. $^{1}$H-$^{1}$H Cosy-NMR of Ru2mono in D-DMSO in range from 10-4 ppm




1f. $^{1}H$-$^{1}H$ Cosy-NMR of Ru2mono in D-DMSO in range from 10-6.5ppm