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