

## Supplementary information

### Structures and pure near-infrared photophysics of erbium and ytterbium (III) Complexes incorporating fluorinated $\beta$ -diketone and neutral unidentate ligands

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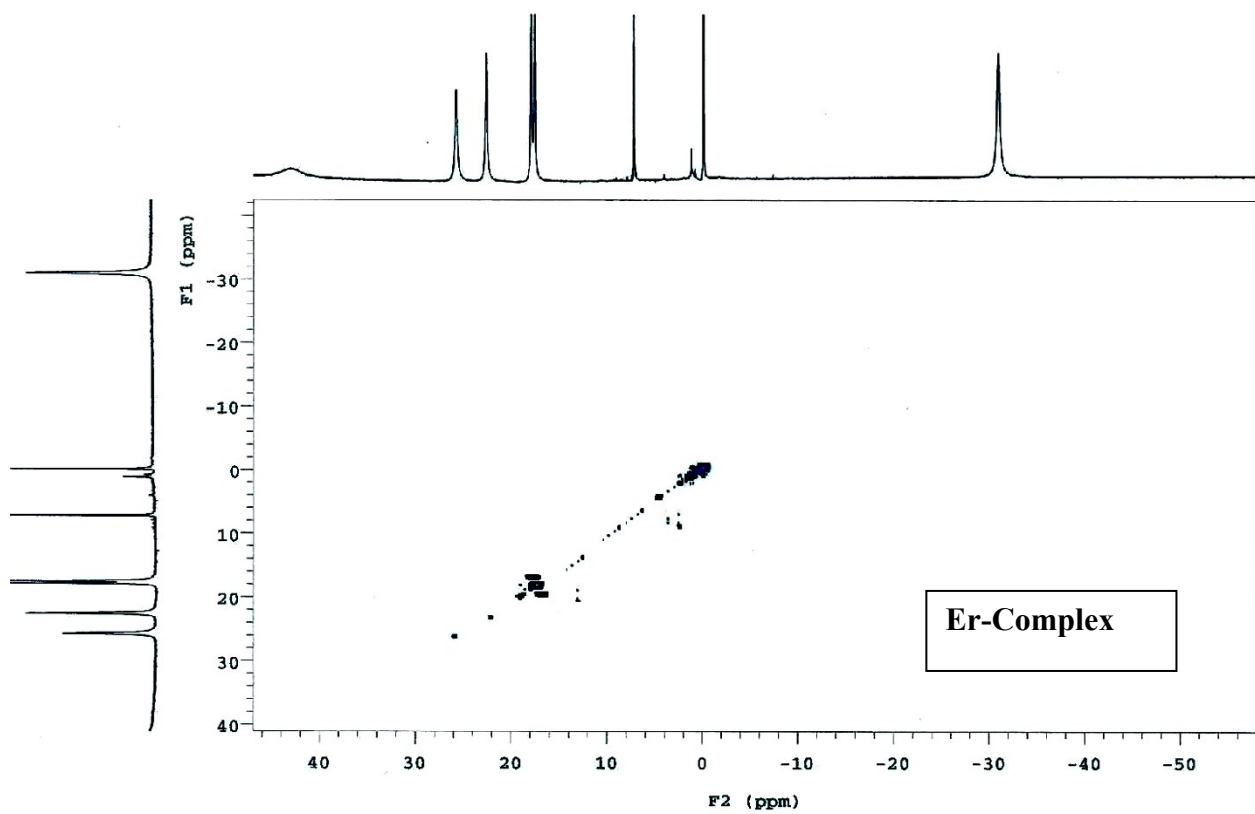


Figure S1. COSY-NMR spectrum of the Er complex.

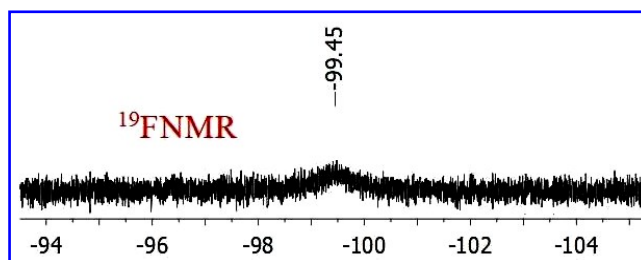
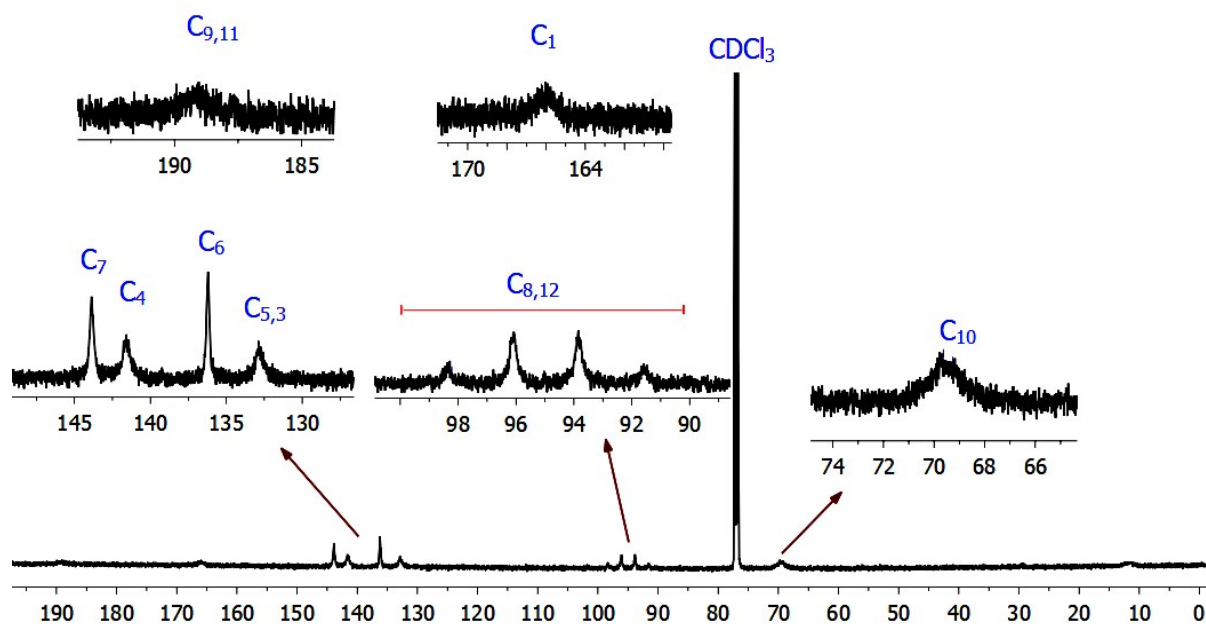
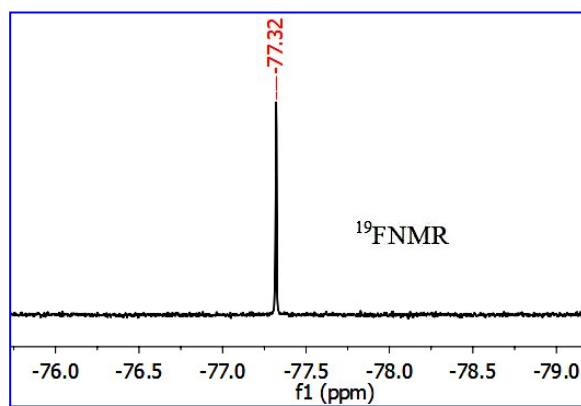


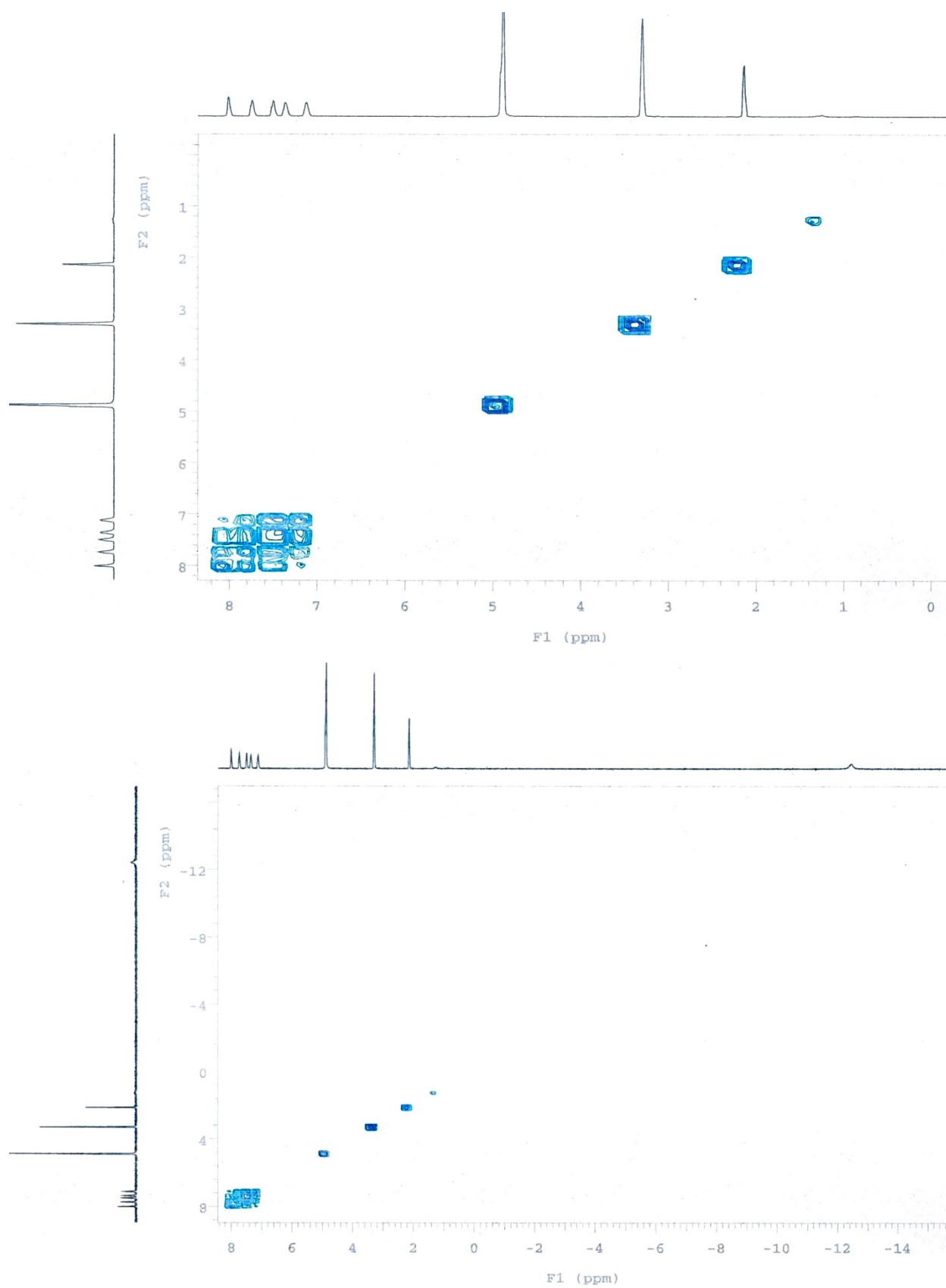
Figure S2.  $^{19}\text{F}$  NMR spectrum of the Er complex.



**Figure S3.**  $^{13}\text{C}$  NMR spectrum of the Yb complex.



**Figure S4.**  $^{19}\text{F}$  NMR spectrum of the Yb complex.



**Figure S5.** COSY NMR spectra of the Yb complex in methanol-d<sub>6</sub>.