

## Supporting Information

for

### **Asymmetric hydrogenation by $\text{RuCl}_2(\text{R-Binap})(\text{dmf})_n$ encapsulated in silica-based nanoreactors**

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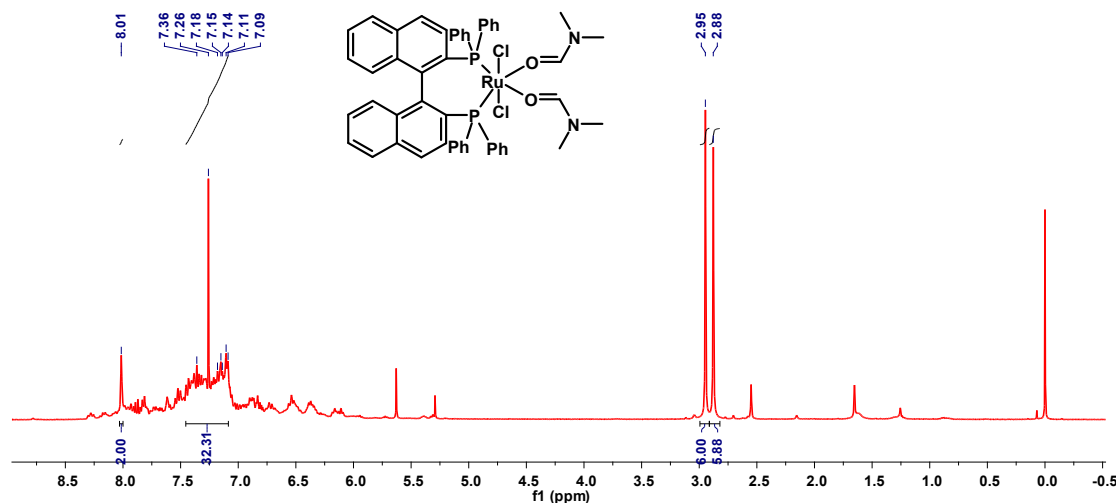


Figure S1.  $^1\text{H-NMR}$  of  $\text{RuCl}_2(\text{R-Binap})(\text{dmf})_n$  ( $n=2$ ) performed under inert atmosphere using degassed  $\text{CDCl}_3$  as solvent.

$^1\text{H-NMR}$  (400 MHz,  $\text{CDCl}_3$ , 298K, TMS): 8.01 (s, 2H, carbonyl H), 7.36-7.09 (m, 32H, aromatic H), 2.95 (s, 6H,  $-\text{CH}_3$ ), 2.88 (s, 6H,  $-\text{CH}_3$ ).

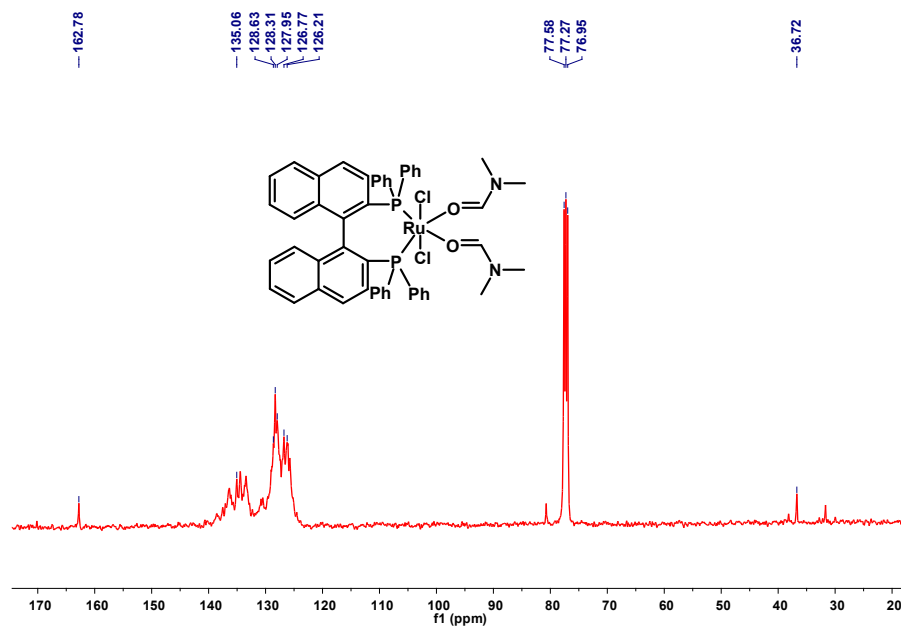


Figure S2.  $^{13}\text{C-NMR}$  spectrum of  $\text{RuCl}_2(\text{R-Binap})(\text{dmf})_n$  ( $n=2$ ) performed under inert atmosphere using degassed  $\text{CDCl}_3$  as solvent.

$^{13}\text{C-NMR}$  (400 MHz,  $\text{CDCl}_3$ , 298K): 162.78 (s,  $\text{C}=\text{O}$ ), 135.06 (s,  $\text{C-P}$ ), 128.63-126.21 (m,

aromatic C), 36.72 (s, CH<sub>3</sub>)

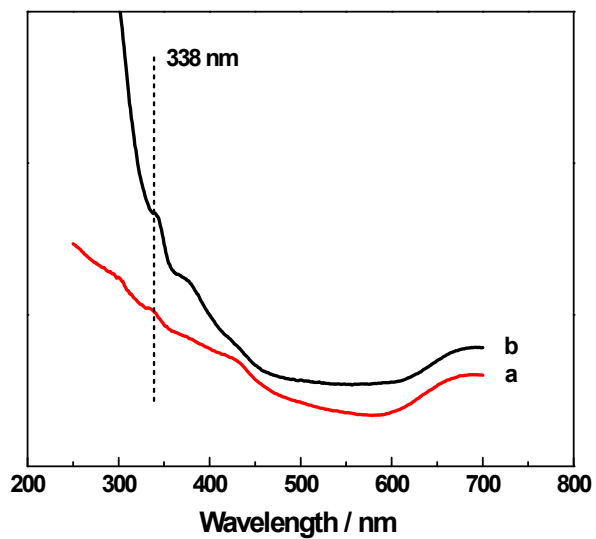
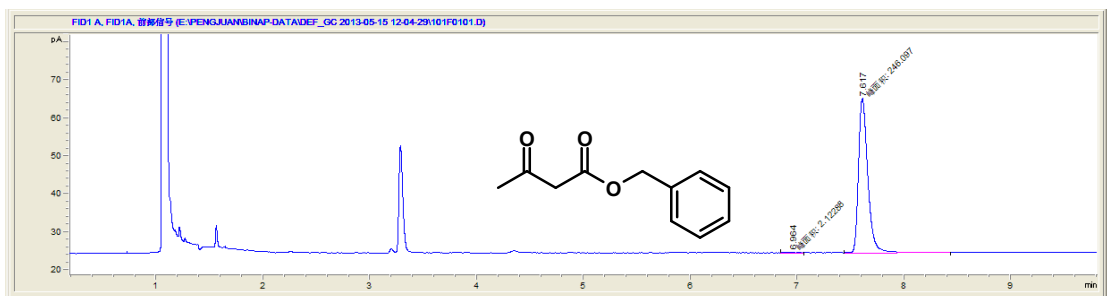
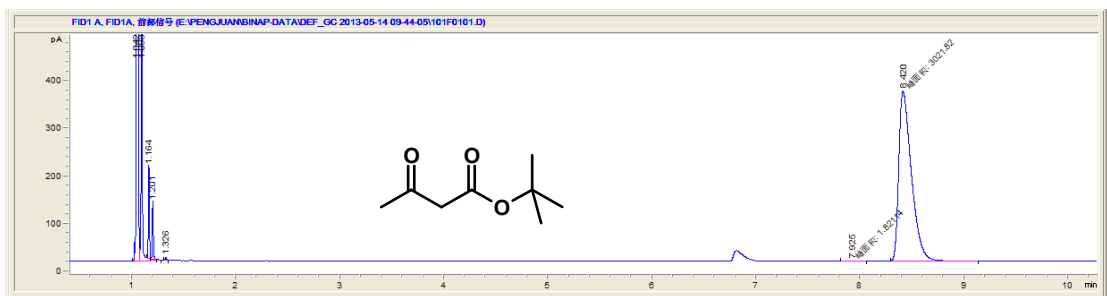
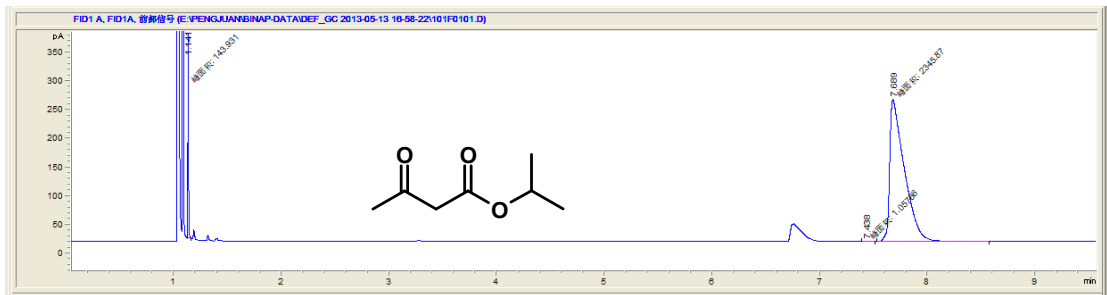
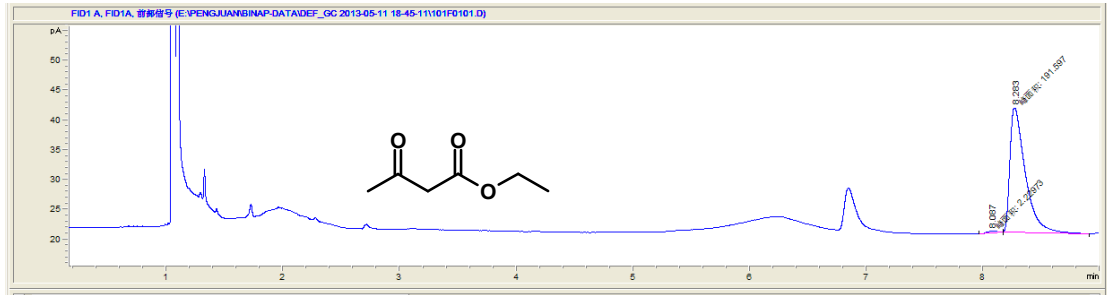
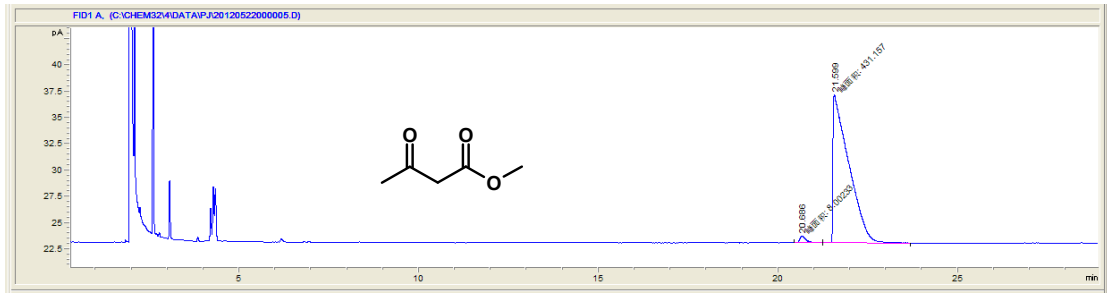


Figure S3. UV-vis diffused reflectance spectrum of (a) solid catalyst  $\text{RuCl}_2(\text{R-Binap})(\text{dmf})_n @\text{C-FDU-12}$  and UV-vis spectrum of (b)  $\text{RuCl}_2(\text{R-Binap})(\text{dmf})_n$  dissolved in dichloromethane.



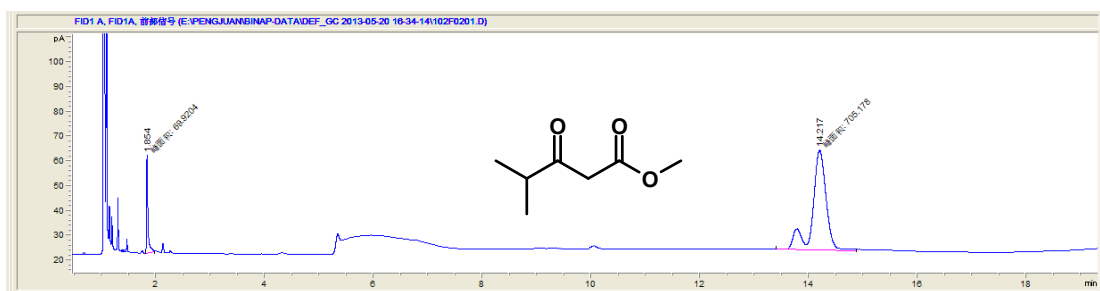
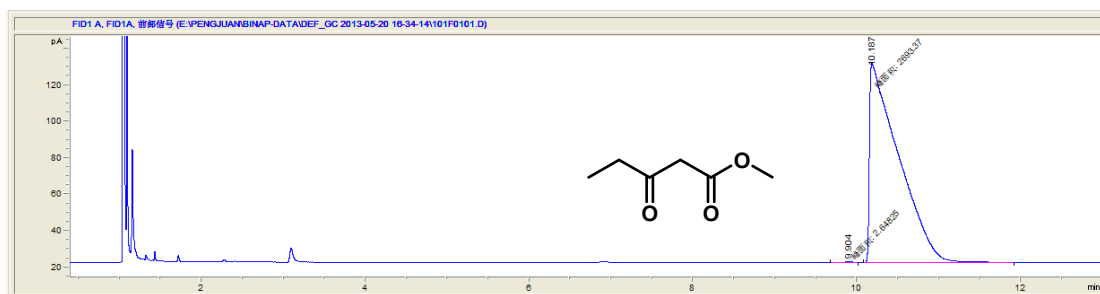


Figure S4. The GC spectra of the corresponding products of various  $\beta$ -keto esters