

Electronic Supplementary Information

Cross-Metathesis between ethane and toluene catalyzed by $[(\equiv\text{SiO})_2\text{TaH}]$: the first example of a cross-metathesis reaction between an alkane and an aromatic

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Experimental: To run the batch experiments, a glass reactor (300 ml) was first charged with complex **1** (50 mg; 5 wt% Ta) in a glove-box under argon, then filled with a pressure of toluene (3.7 kPa) and ethane up to 101.3 kPa; afterwards, it was heated as desired. The reaction products were analyzed by GC ($\text{Al}_2\text{O}_3/\text{KCl}$ column: 50m x 0.32mm; FID detector). Similar conditions were used with α - ^{13}C enriched toluene; the products were analyzed by GC/MS.

To run the reaction in dynamic, complex **1** (420 mg; 4.6 wt% Ta) was charged in a glove-box under argon, into a stainless steel reactor; ethane was sent through a bubbler containing toluene (the temperature of which can be tuned between 0 to 80°C) at a flow rate of 3 ml/min, onto the catalytic bed; the pressure of ethane and the reaction temperature were tuned as desired. The reaction products were analyzed online by GC (same conditions as above).

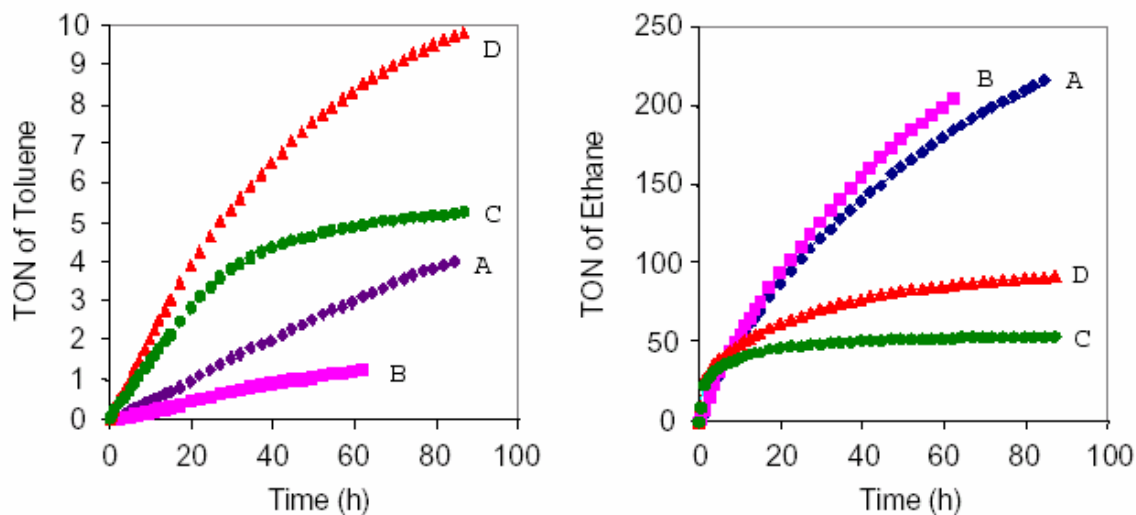


Figure 1. Effect of the pressures of toluene and ethane on their TON during the cross-metathesis reaction catalyzed by $[(\equiv\text{SiO})_2\text{TaH}]$ **1** at 250°C. Ethane (kPa)/ Toluene (kPa): A: $10^3/3.7$; B: $25 \times 10^2/3.7$; C: $10^3/41.3$; D: $25 \times 10^2/71.9$.