

Multi-product steady-state isotopic transient kinetic analysis of the ethanol coupling reaction over hydroxyapatite and magnesia

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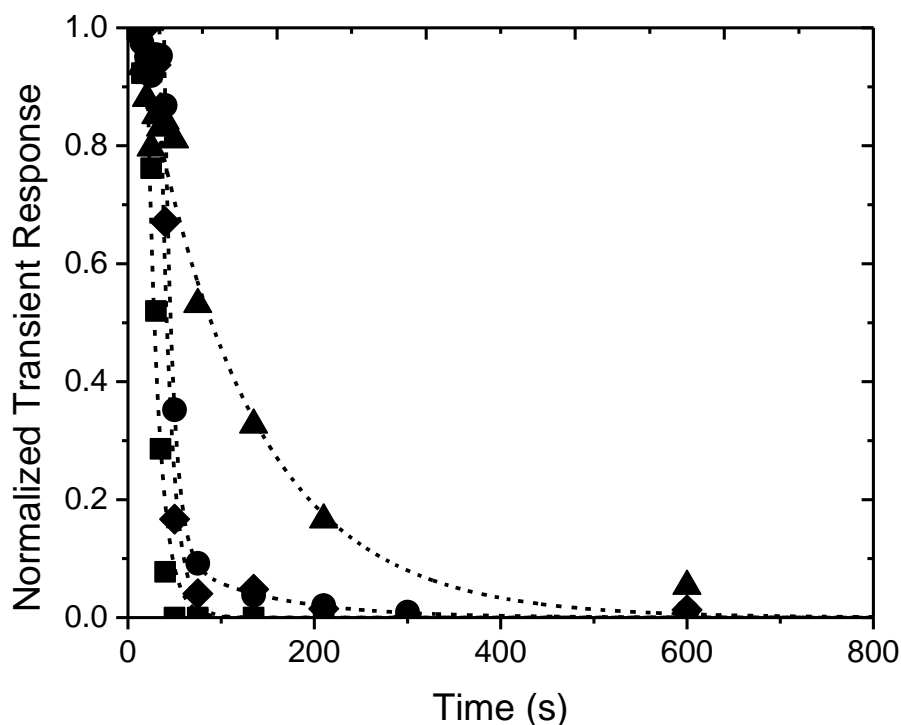


Figure S1. Normalized isotopic transient response curves following the switch from unlabeled ethanol to doubly labeled ^{13}C -labeled ethanol with a total flow of $30\text{ cm}^3\text{ min}^{-1}$ at 653 K during the coupling of ethanol over MgO . (■) argon, (◆) acetaldehyde, (●) ethanol, (▲) butanol.

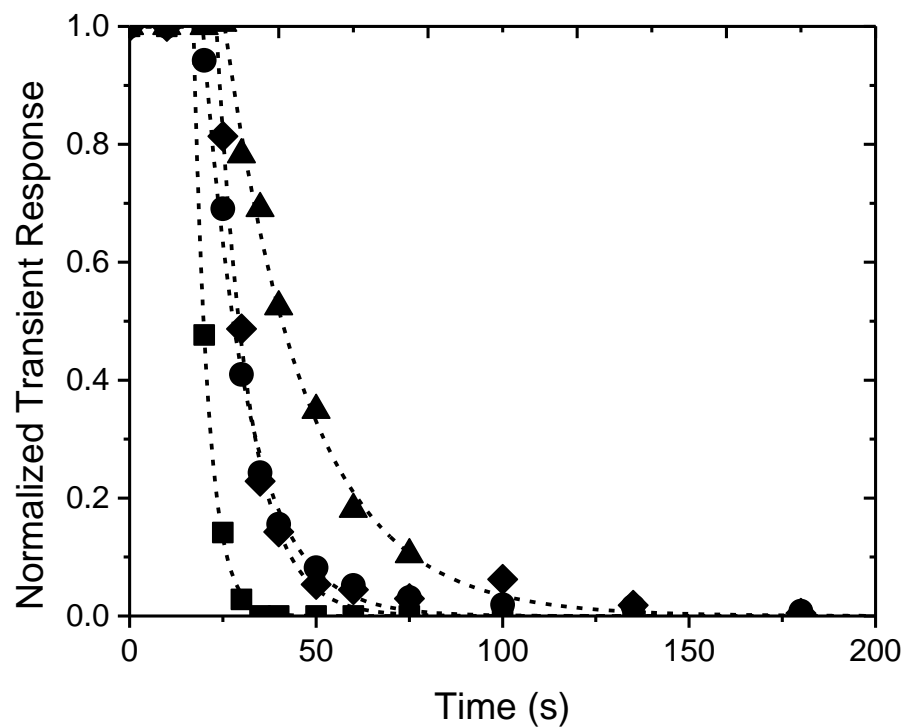


Figure S2. Normalized isotopic transient response curves following the switch from unlabeled ethanol to doubly labeled ^{13}C -labeled ethanol with a total flow of $75\text{ cm}^3\text{ min}^{-1}$ at 653 K during the coupling of ethanol over MgO . (■) argon, (◆) acetaldehyde, (●) ethanol, (▲) butanol.

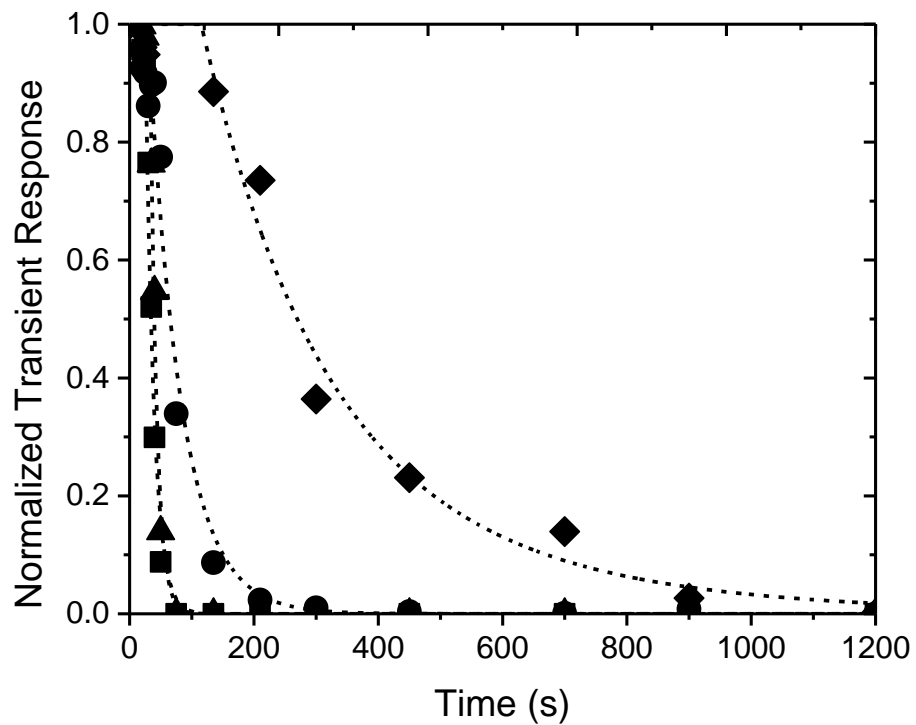


Figure S3. Normalized isotopic transient response curves following the switch from unlabeled ethanol to doubly labeled ^{13}C -labeled ethanol with a total flow of $30\text{ cm}^3\text{ min}^{-1}$ at 613 K during the coupling of ethanol over stoichiometric HAP. (■) argon, (◆) acetaldehyde, (●) ethanol, (▲) butanol.

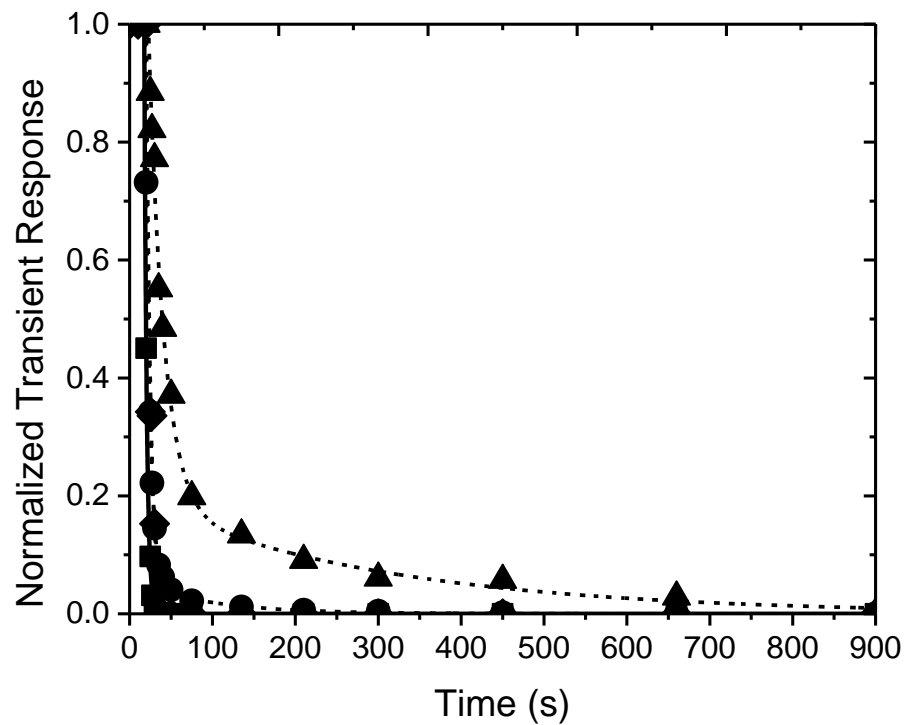


Figure S4. Normalized isotopic transient response curves following the switch from unlabeled ethanol to doubly labeled ^{13}C -labeled ethanol with a total flow of $75\text{ cm}^3\text{ min}^{-1}$ at 613 K during the coupling of ethanol over stoichiometric HAP. (■) argon, (◆) acetaldehyde, (●) ethanol, (▲) butanol.