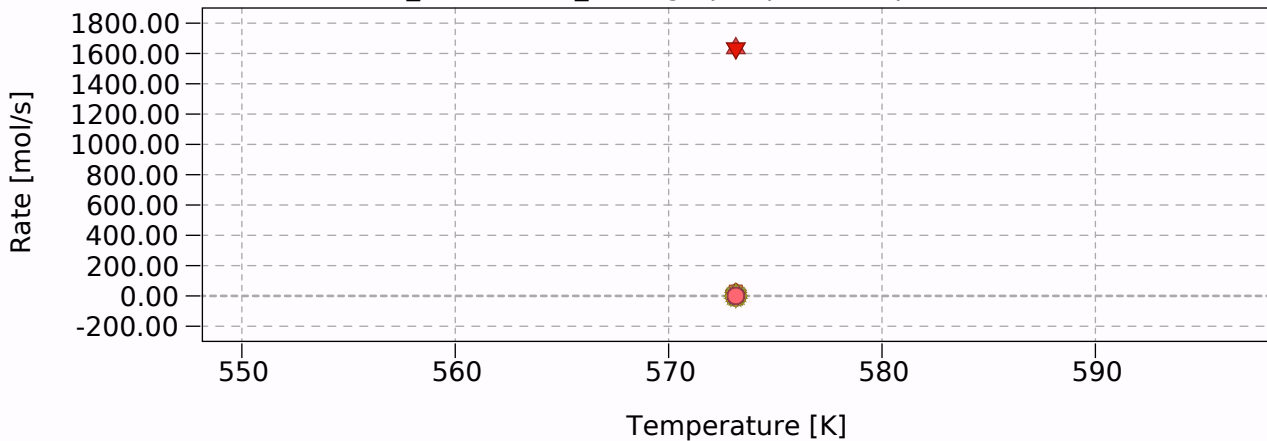


SEQUENCERUN\_2025-02-27\_1209/graphs/pdf/rates.pdf



▲ $\text{CO}_2 + * \rightarrow \text{CO}_2^*$	▼ $\text{CO}_2 + * \leftarrow \text{CO}_2^*$
◆ $\text{CO} + * \rightarrow \text{CO}^*$	▣ $\text{CO} + * \leftarrow \text{CO}^*$
⬠ $\text{H}_2 + 2 * \rightarrow 2 \text{H}^*$	⬡ $\text{H}_2 + 2 * \leftarrow 2 \text{H}^*$
⬢ $\text{H}_2\text{O} + * \rightarrow \text{H}_2\text{O}^*$	⬣ $\text{H}_2\text{O} + * \leftarrow \text{H}_2\text{O}^*$
⬤ $\text{CO}_2^* + * \rightarrow \text{CO}^* + \text{O}^*$	✦ $\text{CO}_2^* + * \leftarrow \text{CO}^* + \text{O}^*$
★ $\text{CO}_2^* + \text{H}^* \rightarrow \text{HCOO}^* + *$	★ $\text{CO}_2^* + \text{H}^* \leftarrow \text{HCOO}^* + *$
★ $\text{CO}_2^* + \text{H}^* \rightarrow \text{COOH}^* + *$	★ $\text{CO}_2^* + \text{H}^* \leftarrow \text{COOH}^* + *$
★ $\text{CO}_2^* + \text{OH}^* \rightarrow \text{COOH}^* + \text{O}^*$	● $\text{CO}_2^* + \text{OH}^* \leftarrow \text{COOH}^* + \text{O}^*$
● $\text{CO}_2^* + \text{H}_2\text{O}^* \rightarrow \text{COOH}^* + \text{OH}^*$	● $\text{CO}_2^* + \text{H}_2\text{O}^* \leftarrow \text{COOH}^* + \text{OH}^*$
● $\text{CO}_2^* + \text{OH}^* \rightarrow \text{HCOO}^* + \text{O}^*$	● $\text{CO}_2^* + \text{OH}^* \leftarrow \text{HCOO}^* + \text{O}^*$
● $\text{CO}_2^* + \text{H}_2\text{O}^* \rightarrow \text{HCOO}^* + \text{OH}^*$	● $\text{CO}_2^* + \text{H}_2\text{O}^* \leftarrow \text{HCOO}^* + \text{OH}^*$
● $\text{COOH}^* + * \rightarrow \text{CO}^* + \text{OH}^*$	● $\text{COOH}^* + * \leftarrow \text{CO}^* + \text{OH}^*$
● $\text{COOH}^* + * \rightarrow \text{COH}^* + \text{O}^*$	● $\text{COOH}^* + * \leftarrow \text{COH}^* + \text{O}^*$
● $\text{HCOO}^* + * \rightarrow \text{O}^* + \text{HCO}^*$	● $\text{HCOO}^* + * \leftarrow \text{O}^* + \text{HCO}^*$
● $\text{CO}^* + * \rightarrow \text{C}^* + \text{O}^*$	● $\text{CO}^* + * \leftarrow \text{C}^* + \text{O}^*$
● $\text{HCO}^* + * \rightarrow \text{CO}^* + \text{H}^*$	● $\text{HCO}^* + * \leftarrow \text{CO}^* + \text{H}^*$
● $\text{HCO}^* + * \rightarrow \text{CH}^* + \text{O}^*$	● $\text{HCO}^* + * \leftarrow \text{CH}^* + \text{O}^*$
● $\text{COH}^* + * \rightarrow \text{CO}^* + \text{H}^*$	● $\text{COH}^* + * \leftarrow \text{CO}^* + \text{H}^*$
● $\text{COH}^* + * \rightarrow \text{C}^* + \text{OH}^*$	● $\text{COH}^* + * \leftarrow \text{C}^* + \text{OH}^*$
● $\text{C}^* + \text{H}^* \rightarrow \text{CH}^* + *$	● $\text{C}^* + \text{H}^* \leftarrow \text{CH}^* + *$
● $\text{CH}^* + \text{H}^* \rightarrow \text{CH}_2^* + *$	● $\text{CH}^* + \text{H}^* \leftarrow \text{CH}_2^* + *$
● $\text{CH}_2^* + \text{H}^* \rightarrow \text{CH}_3^* + *$	● $\text{CH}_2^* + \text{H}^* \leftarrow \text{CH}_3^* + *$
● $\text{HCO}^* + \text{H}^* \rightarrow \text{CH}_2\text{O}^* + *$	● $\text{HCO}^* + \text{H}^* \leftarrow \text{CH}_2\text{O}^* + *$
● $\text{HCO}^* + \text{H}^* \rightarrow \text{HCOH}^* + *$	● $\text{HCO}^* + \text{H}^* \leftarrow \text{HCOH}^* + *$
● $\text{COH}^* + \text{H}^* \rightarrow \text{HCOH}^* + *$	● $\text{COH}^* + \text{H}^* \leftarrow \text{HCOH}^* + *$
● $\text{HCOH}^* + * \rightarrow \text{CH}^* + \text{OH}^*$	● $\text{HCOH}^* + * \leftarrow \text{CH}^* + \text{OH}^*$
● $\text{HCOH}^* + \text{H}^* \rightarrow \text{CH}_2\text{OH}^* + *$	● $\text{HCOH}^* + \text{H}^* \leftarrow \text{CH}_2\text{OH}^* + *$
● $\text{CH}_2\text{OH}^* + * \rightarrow \text{CH}_2^* + \text{OH}^*$	● $\text{CH}_2\text{OH}^* + * \leftarrow \text{CH}_2^* + \text{OH}^*$
● $\text{CH}_2\text{OH}^* + \text{H}^* \rightarrow \text{CH}_3\text{OH}^* + *$	● $\text{CH}_2\text{OH}^* + \text{H}^* \leftarrow \text{CH}_3\text{OH}^* + *$
● $\text{CH}_2\text{O}^* + \text{H}^* \rightarrow \text{CH}_2\text{OH}^* + *$	● $\text{CH}_2\text{O}^* + \text{H}^* \leftarrow \text{CH}_2\text{OH}^* + *$
● $\text{CH}_2\text{O}^* + * \rightarrow \text{CH}_2^* + \text{O}^*$	● $\text{CH}_2\text{O}^* + * \leftarrow \text{CH}_2^* + \text{O}^*$
● $\text{CH}_2\text{O}^* + \text{H}^* \rightarrow \text{CH}_3\text{O}^* + *$	● $\text{CH}_2\text{O}^* + \text{H}^* \leftarrow \text{CH}_3\text{O}^* + *$
● $\text{CH}_3\text{O}^* + * \rightarrow \text{CH}_3^* + \text{O}^*$	● $\text{CH}_3\text{O}^* + * \leftarrow \text{CH}_3^* + \text{O}^*$
● $\text{CH}_3\text{O}^* + \text{H}^* \rightarrow \text{CH}_3\text{OH}^* + *$	● $\text{CH}_3\text{O}^* + \text{H}^* \leftarrow \text{CH}_3\text{OH}^* + *$
● $\text{CH}_3\text{OH}^* + * \rightarrow \text{CH}_3^* + \text{OH}^*$	● $\text{CH}_3\text{OH}^* + * \leftarrow \text{CH}_3^* + \text{OH}^*$
● $\text{O}^* + \text{H}^* \rightarrow \text{OH}^* + *$	● $\text{O}^* + \text{H}^* \leftarrow \text{OH}^* + *$
● $\text{OH}^* + \text{H}^* \rightarrow \text{H}_2\text{O}^* + *$	● $\text{OH}^* + \text{H}^* \leftarrow \text{H}_2\text{O}^* + *$
● $\text{OH}^* + \text{OH}^* \rightarrow \text{O}^* + \text{H}_2\text{O}^*$	● $\text{OH}^* + \text{OH}^* \leftarrow \text{O}^* + \text{H}_2\text{O}^*$
● $\text{CH}_4 + 2 * \rightarrow \text{CH}_3^* + \text{H}^*$	● $\text{CH}_4 + 2 * \leftarrow \text{CH}_3^* + \text{H}^*$
● $\text{CH}_3\text{OH} + * \rightarrow \text{CH}_3\text{OH}^*$	● $\text{CH}_3\text{OH} + * \leftarrow \text{CH}_3\text{OH}^*$
● $\text{CH}_2\text{O} + * \rightarrow \text{CH}_2\text{O}^*$	● $\text{CH}_2\text{O} + * \leftarrow \text{CH}_2\text{O}^*$