Mechanisms of Hydrocarbon Poisoning of a Urea SCR Catalyst

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Surface study to understand which SCR reactions are inhibited by hydrocarbons

- Hydrocarbons known to inhibit SCR performance
- Understanding what reactions and which catalytic functions are effected leads to improved tolerance

In-situ DRIFTS reactor

SCR conditions:

\[
\begin{align*}
\text{NO}_2 & \quad \rightarrow \quad \text{Fe} \\
\text{N}_2 + \text{H}_2\text{O} & \\
\text{Fe} & \quad \rightarrow \quad \text{NH}_3 \\
\text{O}_2 & \quad \rightarrow \quad \text{N}_2 + \text{H}_2\text{O} \\
\text{CH}_3 & \quad \rightarrow \quad \text{toluene}\n\end{align*}
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