A catalytic hydrogenation, or catalytic reduction, is a reduction of an organic compound using molecular hydrogen as the reducing agent and a transition metal as the catalyst. Most catalytic hydrogenations are addition reactions.

eg. 1:

\[
\text{CH}_2=\text{CH}_2 + \text{H}_2 \xrightarrow{\text{catalyst: transition metal}} \text{CH}_3-\text{CH}_3
\]

eg. 2:

\[
\begin{array}{c}
\text{catalyst: transition metal} \\
\text{H}_2
\end{array}
\]

eg. 3:

\[
\begin{array}{c}
\text{catalyst: transition metal} \\
2\text{H}_2
\end{array}
\]

eg. 4:

\[
\begin{array}{c}
\text{catalyst: transition metal} \\
\text{H}_2
\end{array}
\]

There are many transition metals used as catalysts in catalytic hydrogenation. The most common ones are Pt, Pd, and Ni.

see also heat of hydrogenation

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**Contributors**

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