Alkenes do not undergo hydration upon treatment with water even at very high temperatures. There are two approaches to hydrating alkenes:

1. Reaction of the alkene with water in the presence of a strong-acid catalyst.
2. Using an indirect method, such as oxymercuration-reduction, also known as oxymercuration-demercuration or, simply, oxymercuration.

```
alkene \xrightarrow{\text{oxymercuration-reduction}} \text{alcohol}
```

net reaction:

```
alkene \text{H}_2\text{O} \xrightarrow{} \text{alcohol}
```

The protocol is carried out in two stages:

**Stage 1**: Oxymercuration: The alkene is treated with aqueous mercury (II) acetate, Hg(OAc)$_2$, which converts the alkene into an organomercury compound (see organometallic compound).

**Stage 2**: Reduction (Demercuration): The organomercury compound is treated with a reducing agent, usually NaBH$_4$, which converts the organomercury compound into an alcohol.

eg: Stage 1:

```
\begin{align*}
\text{alkene} & \xrightarrow{\text{aq. Hg(OAc)$_2$}} \text{organomercury compound} \\
\text{CH}_3 & \quad \text{CH}_3 \\
& \quad \text{HgOAc}
\end{align*}
```

The reaction is an anti addition.

Stage 2:

```
\begin{align*}
\text{organomercury compound} & \xrightarrow{\text{NaBH}_4} \text{alcohol} \\
\text{CH}_3 & \quad \text{CH}_3 \\
& \quad \text{HgOAc}
\end{align*}
```

Stage 1 + Stage 2 =

```
\begin{align*}
\text{alkene} & \xrightarrow{} \text{alcohol} \\
\text{CH}_3 & \quad \text{CH}_3 \\
& \quad \text{HgOAc}
\end{align*}
```

The net reaction is a Markovnikov addition:
see also hydroboration-oxidation

Contributors

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