

# Equilibrium

Chemistry

Dynamic equilibrium, and Le Chatelier's principle.

*Applying Le Chatelier.*

| Change                                 | Shift                                 |
|----------------------------------------|---------------------------------------|
| <b>Increase reactant concentration</b> | Toward products                       |
| <b>Increase pressure</b>               | Toward fewer moles of gas             |
| <b>Increase temperature</b>            | Toward the endothermic direction      |
| <b>Add a catalyst</b>                  | No shift — equilibrium reached faster |
| <b>Remove product</b>                  | Toward products                       |

A catalyst never changes the position of equilibrium. It changes only how quickly equilibrium is reached.