

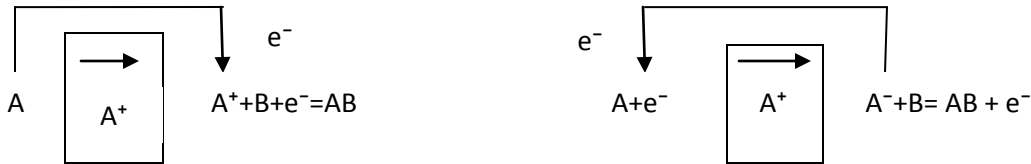
## Historical overview

1. How were problems attacked? How should we? Define problem, gather background on problem, solve the problem
2. Fuel cells are supposed to be simple, but the reality is that they are very complex and cross disciplinary

Chapter One summarizes types of fuel cells

Characterized by their electrolyte: AFC, PEM, PAFC, MCFC, SOFC

Temperature of use: Low, Medium, High



Why isn't all the hydrogen and oxygen in the atmosphere in the form of water?

Potential Barrier

Catalyst needed to lower

Keep in mind

1. Ion diffusion without electric conduction

Scientific Method

Define problems

1. Fuel?
  - a. What's available?
  - b. Large potential
2. Catalyst
3. Electrolyte
4. Market

All expensive components, knew this very early on

Grove 1842, Gaseous Voltaic Battery

Already worried about commercial application

Already saw the future of hydrocarbons

Mond and Langer 1889

First "practical" fuel cell

Sulfuric acid as electrolyte

Immediate drop in voltage