Excited electrons (thermal or electrical) move up energy levels and when they drop to ground state, photons are produced.

The different frequencies produced can be recorded on line spectra.

Hydrogen:

- Emission spectrum is made up of separate lines, discontinuous.
- Lines converge as frequency or energy increases.

Energy levels:

\[ E_{2} - E_{1} \]
\[ f = \frac{E_{2} - E_{1}}{h} \]

Distance between energy levels means higher energy.

- The difference between energy levels converges as you move further from nucleus.
- Convergence limit is the energy for ionization \( N = 1 \rightarrow n = \infty \).