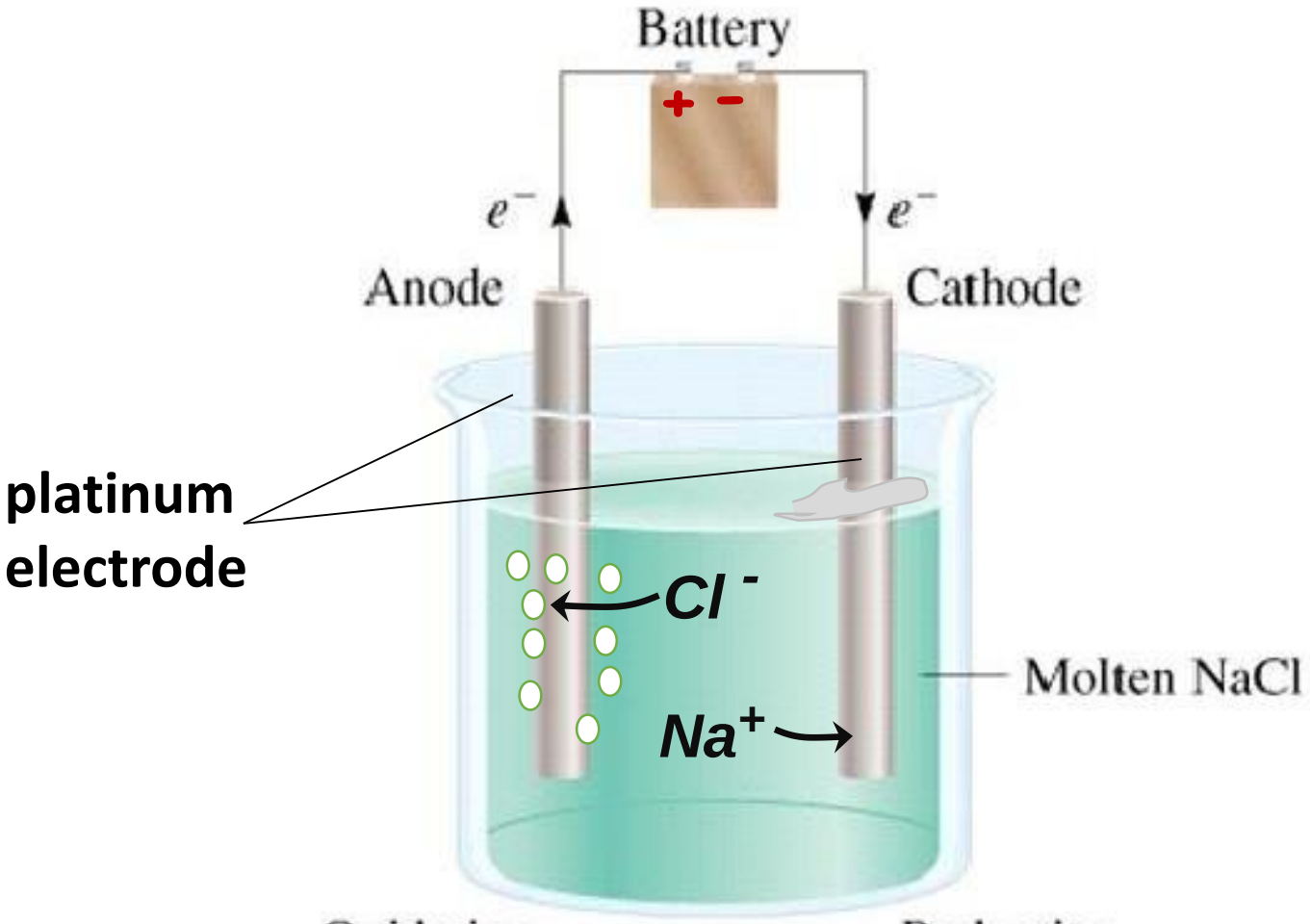
ELECTROLYSIS OF MOLTEN SALT

MOLTEN SODIUM CHLORIDE



- Ions in the molten NaCl = Na^+, Cl^-
- There is no competition among the ions in the molten NaCl to undergo reduction or oxidation.
- Na^+ ions will be discharged at cathode and Cl^- ions discharged at anode.

Cathode (red) : $Na^+(l) + e^- \longrightarrow Na(l)$

Anode (ox) : $2Cl^-(l) \longrightarrow Cl_2(g) + 2e^-$

Overall : $2\,Na^+(l) + 2Cl^-(l) \longrightarrow 2\,Na(l) + Cl_2(g)$

- A pale green gas, Cl_2 is liberated at anode.
- Molten, silvery white metallic sodium, Na forms at cathode and floats on top of the molten sodium chloride.
- The metal remains as liquid because its melting point is only 97.8 ^oC.