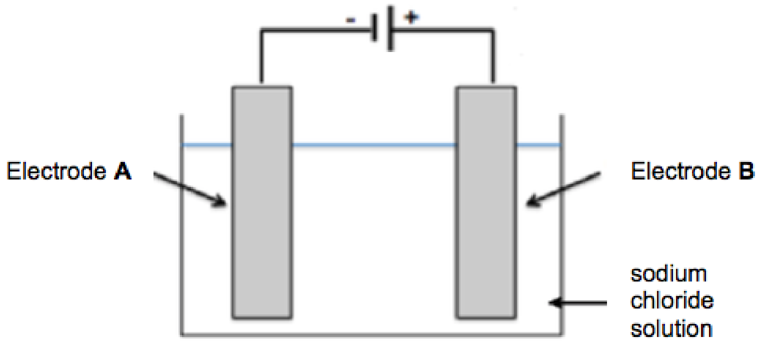
Vecka 13 Simons extra-lektion måndag . Elektrolys av NaCl i vatten.



The equation for the overall reaction is:

$$2\ H_2O(l) + 2\ Cl^-(aq) \rightarrow H_2(g) + Cl_2(g) + 2\ OH^-(aq)$$

i.	Give the half-equation for oxidation and specify at which electrode (**A** or **B**) it takes place.	2 marks
ii.	Is the formation of hydrogen, $H_2(g)$, and chlorine, $Cl_2(g)$, expected according to the standard redox potentials? Explain your answer.	3 marks
iii.	Calculate the time required for the production of $1.00 \times 10^4\ dm^3$ of chlorine, $Cl_2(g)$, if the current is 1.50×10^4 A.	3 marks

Given: Standard redox potentials:

Redox couple	$E^\ominus$ **/ V**
$Cl_2\ (g) / Cl^-(aq)$	+1.36
$O_2\ (g) / H_2O(l)$	+1.23
$H_2O(l) / H_2(g)$	-0.83
$Na^+(aq) / Na(s)$	-2.71

Molar volume of chlorine gas:

$V_m = 24.5\ dm^3\ mol^{-1}$ under the experimental conditions.

1 Faraday = $9.65 \times 10^4\ C\ mol^{-1}$