

Fri 4/27

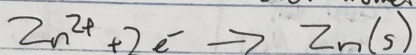
Ch 21

Radioactive Decay

Electrolysis Example

$$F = 96500 \text{ C/mole}$$

moles $e^- \rightleftharpoons$ moles substance
stoichiometric ratio



Ex: How much time does it take to deposit 0.100g silver onto a bracelet from a solution containing Ag^+ ions using a current of 250mA ($1\text{A} = 1\text{C/s}$)?

$$0.100\text{g Ag} \times \frac{1\text{mol}}{107.87\text{g Ag}} \times \frac{1\text{mol } e^-}{1\text{mol Ag}} \times 96500 \text{ C/mole } e^-$$

$\text{Ag}^+ + 1e^- \rightarrow \text{Ag(s)}$

$$Q = 89.5\text{C}$$

$$Q = It$$

$$t = \frac{Q}{I}$$

$$= \frac{89.5\text{C}}{0.250\text{C/s}} = 358\text{s}$$

Ch 21

Radioactivity

- Radioactivity - spontaneous emission of radiation when the nucleus of an atom transfers into a different one
- Discovered by Henri Becquerel in 1896 when a sample of uranium produced an image on a photographic plate
- Radiation emitted from the uranium caused the image
- Becquerel's student Marie Curie conducted much of the early work on radioactivity, receiving 2 Nobel prizes
- Marie Curie died in 1934, from her work w/ radiation, since it wasn't known at the time that radiation posed serious health issues. Her papers and even her cookbook are stored in shielded boxes b/c they're still highly radioactive and can't be handled safely

girl yes power!

History of Radioactivity

- "Undark" paint! (glow-in-the-dark)
 - ↳ sold commercially on everyday products
 - ↳ workers who make these products got cancer, sometimes died