

Cloud Chamber

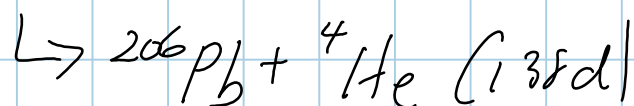
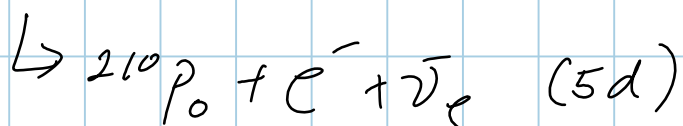
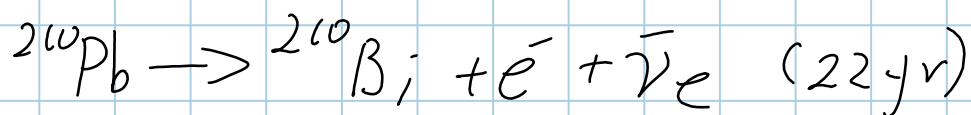
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Prelab Presentation.

Cloud Chamber is an apparatus that allows us to see particles decaying from a nuclear reaction.

In this case, we're looking for α -particle, ${}^4\text{He}$.

Our α -particle source is a pin covered with ${}^{210}\text{Pb}$ isotope.



${}^4\text{He}$ has $\sim 5 \text{ MeV}$ of K.E.

* Cloud Chamber.

- Super saturated soup of alcohol chilled to -35°C .
- Particle passing through creates nucleation.

- Nucleation: Phase transition from gas \rightarrow liquid due to ionization from α -particle

- This will create a track where α -particle passes through

* ^{210}Po .

Radioactive plated needle.
see above for decay chain.

Source for ^4He at 5 MeV

Safety ! ! ! ! !

Alcohols: flammable & Toxic.
Not the drinking kind!

Power on cooling before
the chamber.

Compressed Gas \equiv Dangerous.

Gas escape through top hole
of the chamber.

Gas is an asphyxiant.
Do not run continuously
Open door if needed.

Close cylinder valve
at the end of use.