



The study and create a radiation particle detector cloud chamber

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Introduction: Cloud chamber was developed by Scottish physicist C.T.R. Wilson between 1896 and 1912, to detect the ionizing radiation particles such as Alpha Beta and Proton. This invention made Wilson and Arthur H. Compton won the physics Nobel prize in 1927

Purpose: The study is intended to know how to build a low price diffusion cloud chamber.

Methods:

1. Fit flannel on the top of a plastic container.
2. Drop 99.9% Isopropyl alcohol 15 milliliter onto flannel.
3. Put 3 drops of 99.9% Isopropyl alcohol and spread it all over the floor of the container.
4. Place Am-241 Radioactive source on the floor of container.
5. Put the container on dry ice.
6. Observe under a flash light.

Results: This Cloud chamber can track Alpha and Beta particles.

Conclusion: Radiation particle introduce ion⁺ and ion⁻ along the way it pass, which are condensation cores that attract isopropyl alcohol molecules around it. The mist-like trail of small droplets can be seen as “Cloud track” along the way that particles pass through for several second and have difference in shape due to the type of particle.

Keywords: Cloud chamber

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Abbreviations:

Am-241: Americium-241

References:

1. Cloud chamber. (2014). Retrieved from Institute of Physics: <https://www.iop.org/explore-physics/understanding-our-environment/cloud-chamber>
2. SheikYerBooty. (2004, February 23). Cloud chamber. Retrieved from WIKIPEDIA: https://en.m.wikipedia.org/wiki/Special:History/Cloud_chamber