GENERATION OF CHARGED CLOUD DROPLETS FOR LABORATORY EXPERIMENT

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ABSTRACT

Atmospheric rain cloud contains charged cloud droplets. To study the homogenous effect of electric charge **E** on formation of atmospheric cloud droplets, charged cloud droplets were generated in the laboratory using a cloud chamber at room temperature and calorimetric system (at about 100℃). During the investigation, ionization effect of $\boldsymbol{N_2}$ gas and contact charging technique using Zn-Cu and Al-Cu electrodes; powered by direct current DC source, were utilized. Estimated induced charges in the chamber ranges between 0.417 - 0.534 pC, 2.20 - 8.50 pC and 0.60 - 414.75 pC for Zn-Cu, spiral Al-Cu and spiral Al/insulated Cu, respectively. The sizes of the charged droplets D_C that formed in about 15.0 s ranges between 1.0 - 3.0 mm for experiment in calorimetric system, and D_C for uncharged condensed vapour formed in about 120.0 second were inestimable ($D_C << 1.0$ mm).

Keywords: Cloud chamber, Calorimetric system, Induced charges and Coulomb force.