Supplementary information

AgI-KI aerosol catalysts with excellent combustion and nucleation performance for weather modification

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Nucleation rate measurements.

The nucleation rate could be calculated via the below equation:

$$N = \sum n \times \frac{V_1}{V_2} \times \frac{S_1}{S_2} \times \frac{1}{m}$$

where N is the nucleation rate of aerosol (1/g*AgI), $\sum n$ is the sum of ice crystal, which could be counted via an optical microscope, m is the mass of AgI, V_1 and V_2 are volumes of the burning room and the measured sample, S_1 and S_2 are areas of the isothermal cloud chamber and the optical microscope, respectively. The image of the ice crystals recorded during the measurement was shown in **Figure S3**.
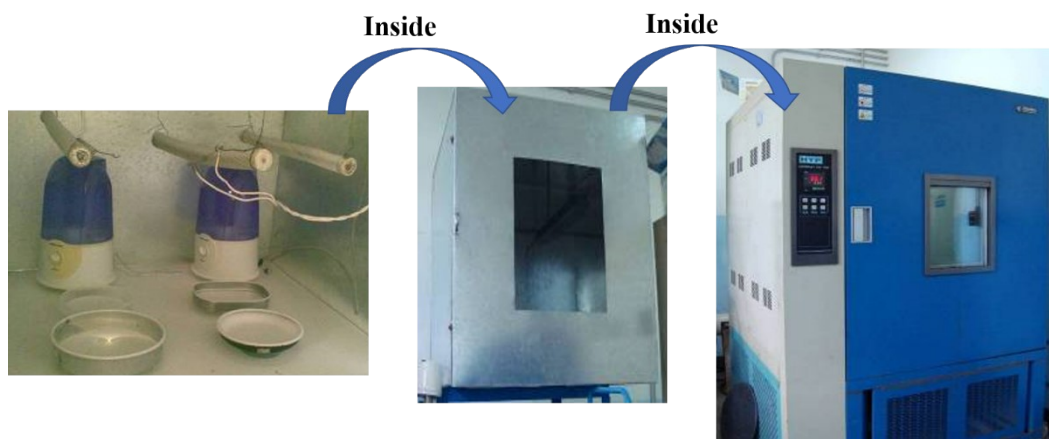
Inside **Inside**

Figure S1. Picture of the low temperature cabinet employed in this work. Reproduced from Ref[1] with permission.

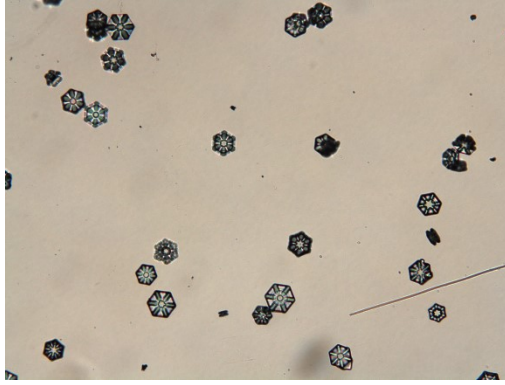**Figure S2.** Picture of the isothermal cloud chamber (1 m³).

Figure S3. The optical image of ice crystals formed during the nucleation measurement.

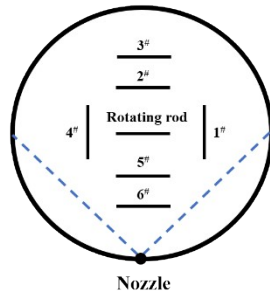**Figure S4.** Pictures of the environment climate chamber from China Electric Power Research Institute.

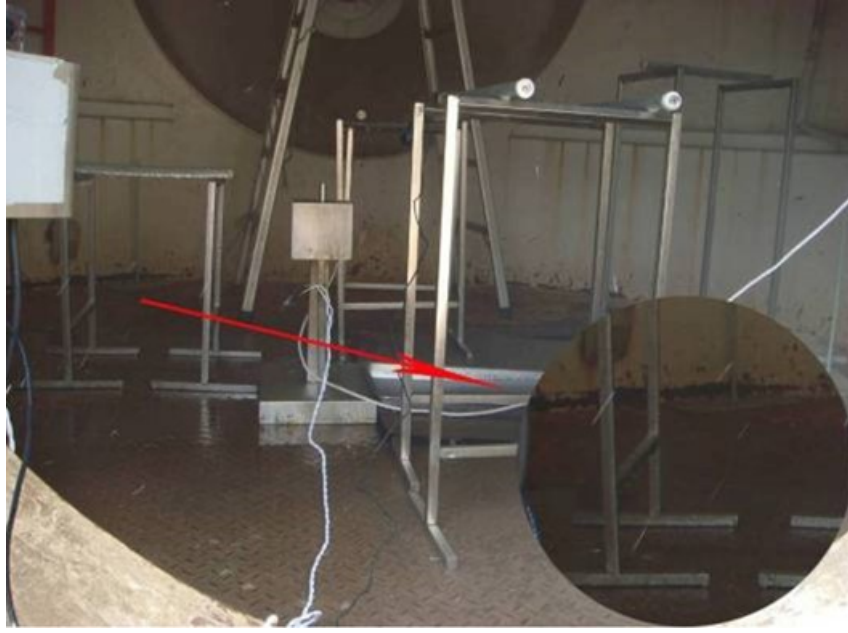**Figure S5**. The spatial arrangement inside the chamber (horizontal view).

Figure S6. Picture of the formed icing during the measurements.

Table S1. The average amount of icing formed after the release of different aerosols (-10 ℃).

Formula	Mass of formed icing (g)
1$^{\#}$	16.1
2$^{\#}$	25.2
3$^{\#}$	24.07

Table S2. The amount of icing formed of formula 2[#] at different time (0.1 g, -10 °C).

Time (min)	Mass of formed icing (g)
10	3.5
20	6.2
40	25.2
60	38.2
80	40.2

Reference.

1.	T. Song, F. Xu, R. Yang, X. Guo, M. Zou, Y. Liu and X. Li, *AIP Advances*, 2021, **11**, 025045.