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## LETTER

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### Electron Microscopic Observation of Aluminum Chloride

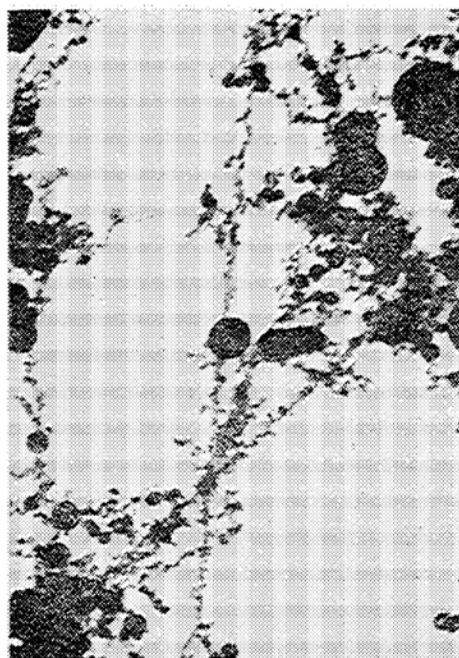
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A smoke of aluminum chloride, one of the

halide catalysts of the Friedel-Crafts' type, was observed by means of electron microscopy. With regard to the same material, the electron microscopic observation has not yet been reported in the literatures I could see. This paper presents interesting micrographs obtained on the same material.

Aluminum chloride used here was prepared



Electron micrographs of aluminum chloride.

Fig. 1.—Magnification: 20,000.

Fig. 2.—Magnification: 18,000.

as follows: A stream of chlorine was flowed over pure aluminum foils (99.9%) heated at about 250°C in order to obtain the aluminum chloride smoke.

Figs. 1 and 2 show the micrographs obtained from the aluminum chloride smoke. In these micrographs there are found the two types of particles. One of them has the forms (size: 200 A.—0.2  $\mu$ ) as recognizable in the case of the usual smoke of metal oxides. Another of them has spherical forms (size: 500 A.—1  $\mu$ ). The spherical particles seemed to be the hydrate of chloride, because the number of these spherical particles increased always on exposure of the specimen to the air.

Since the wet aluminum chloride can not play a role of a catalyst, the spherical particles remarked in Figs. 1 and 2 will not behave as an active catalyst, but the smoke-like particles in Fig. 1 will be active in catalytic reaction.

The sample prepared by subliming the commercial aluminum chloride gave the same micrographs as are shown in Figs. 1 and 2.

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