A New Assignment of the Infrared Absorption of Aluminium Hydroxide Disoap

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The I.R.-absorption of aluminium hydroxide disoap has previously been investigated on soaps precipitated from water solution by Bauer et al. and on the OH-group and the aluminium atom. Hydrolysis with D₂O gave absorption at 3.7 μm due to the OD-group and at 6.3 μm due to the COO⁻-group. But in this case the absorption at 10.15 μm was replaced by one at 13.0 μm. (Fig. 1).

These results give evidence that this absorption cannot exclusively be due to AlO-vibrations and point to an absorption of the bending vibrations of the hydroxide group. Some coupling between these vibrations and the AlO-vibrations is probable.

A more complete report later will give the experimental details and also a more comprehensive discussion of the results.

![Fig. 1. Infrared spectra of aluminium disoaps in benzene.](image)

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\text{Al(OC}_3\text{H}_7\text{)}(\text{OOCC}_{17}\text{H}_{35})_2 + \text{H}_2\text{O} \rightarrow \text{Al(OC}_3\text{H}_7\text{)}(\text{OOCC}_{17}\text{H}_{35})_2 + \text{D}_2\text{O}
\]

soaps formed by the reaction of trimethyl aluminium and fatty acids by Sheffer et al.

In the present investigation aluminium hydroxide distearate was prepared in the following way. The alloxide distearate was prepared according to Mehrotra and hydrolyzed to hydroxide disoap. All operations were performed in an atmosphere of nitrogen.

The hydrolysis using only water gave spectra analogous to those published earlier and showed the OH-group absorption at 2.7 μm, the COO⁻-group absorption at 6.3 μm and one absorption at 10.15 μm, which earlier was believed to be due to vibrations between the oxygen atom of

Acknowledgement. The author is very grateful to Professor Arne Ölander for his stimulating interest in this research and to Professor Rham Charan Mehrotra who kindly suggested that the soap should be prepared in this way.


Received May 20, 1965.

Acta Chem. Scand. 19 (1965) No. 6