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resin are discussed.

1. Relation between "R/si" and dielectric properties. (R: Organic radical).

(1) The relation between R/si and temperature at which loss angle became maximum, was already reported in the last paper (this Bulletin 26, 76, 1951). After then this relation has been investigated in detail and it is found that when the maximum values of loss angle are same, the temperature at which loss angle is maximum, is nearly proportional to R/si at the same frequency.

(2) It is also found that in the resin whose R/si is small, the anomalous dispersion which is considered to be due to OH radical, occurs as in the other resin, and that in this resin another anomalous dispersion appears at lower temperature.

It is considered that this phenomenon is due to the bound water which is produced in poly-condensation process.

2. Relation between the kind of organic radical and dielectric properties.

(1) The aryl silicon resin shows smaller variation of the temperature, at which loss angle is maximum, with R/si than that of alkyl silicon resin.

It is considered that aryl radicals in silicon resin may prevent a siloxane bridge formation, therefore the above-mentioned phenomenon appears.

(2) The effect of frequency upon the temperature characteristics of dielectric properties of aryl silicon resin is different from that of alkyl silicon resin.

At temperature lower than that at which loss angle is maximum, frequency gives little effects upon the dielectric properties of the aryl silicon resin.

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13. Studies on Micro-Crystals by Electron Microdiffraction (Preliminary Report)

Eiji Suito and *Natsu Uyeda*

(Suito Laboratory)

It had been very difficult to identify the material under examination with the electron microscope. Though electron diffraction method is a very simple one for this purpose, we could not observe directly the portion of the specimen at which the diffraction took place. The electron microscope, however, which had three electron lenses for magnifying system was constructed lately, by which we could realize the use of the above mentioned two methods, i. e. electron micrograph and diffraction at the same time with the same apparatus. Such an electron microscope has two projection lenses : one as interme

diate and the other as ordinary projection lens.

In this apparatus, an intermediate aperture (0.1-0.05 mm in diameter) was used between the objection and the 1st projection lens at the position of the 1st image of the specimen through the objection lens, by which we could limit the sight field of the object, and when the focal lengh of the intermediate lens was changed, the diffraction pattern of the very portion of the specimen just limited by the aperture could easily be obtained. Those methods may be called the "Electron Microdiffraction Method".

We studied with this apparatus on many materials such as Sericite, Kaolinite, Trigon gold sol, etc.. Especially on the "Trigon" particles, we reported (this Bulletin 26 (1951) 78) many results, obtained by SM-T4, an ordinary electron microscope which has diffraction apparatus, in relation to their character, crystalline state, lattice structure and so on. The results obtained by the new method verified those obtained by older one.

The interpretation of the N-patterns that these particles had grown up towards (111) planes of the face centered cubic lattice, became reasonable. Moreover, when such crystals were very thin, many extra-spots which were forbidden for the crystals of the face centered cubic lattice appeared on the N-patterns. This might be ascribed to double reflection of the electron in the crystal, but decisive conclusion could not yet be attained.

We consider this method very convenient and reasonable, being a new weapon for the studies on micro-crystalline particles.

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14. Studies on the Shadow Microscope as an Attachment of Electron Microscope

Eiji Suito and *Natsu Uyeda*

(Suito Laboratory)

It is very reasonable to use electron diffraction method to identify a specimen which is under examination with the electron microscope. One of the practical methods of this idea applicable to the table type electron microscope (SM-T4), having only two electron lenses, is the shadow microscope, which gives an enlarged shadow image of the specimen cast on the fluorescent screen by a reduced point source of electron. We prepared a hollow bullet shape specimen holder, whose size is 2 cm in dia. and 5 cm in length, and then it became possible to set the specimen just behind the projection lens, keeping a distance from 3 to 10 mm between them. The migration of the specimen was carried out with the lever which was operated by the spindle of the ordinary specimen migrator of electron diffraction apparatus. A D.C. power