The comparisons between the observed values and values calculated by equation (3) about sample No. 1 (A-kind material, Curie point at 38° C) are shown in Fig. 1, where the calculated values are represented by curves and the measured values by dots. For sample No. 2 (B-kind material, Curie point at 22° C), the comparison are shown by Fig. 2. In both figurs, the measured values coincide fairly well with the calculated ones. It can not be decided which of these equations is more approximate to the real state, because the difference of characteristics between equation (3) and (4) are very small.

Characteristics of Dielectric Amplifier:

In fundamental circuit shown in Fig. 3, if internal resistance in E_0 and E_m are

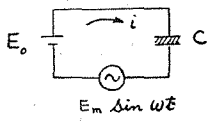

Fig. 3

neglected and $E_0 \gg E_m$ is assumed, the current flowing through C is

$$i = \omega C E_m \sin \omega t \qquad (5)$$

where $C = \kappa\varepsilon$. The value corresponding to g_m in vacuum tube (the change of current to small change of bias) is

$$g_0 = \omega\kappa E_m \left(\frac{d\varepsilon}{dE_0}\right) E_0 . \qquad (6)$$

As ω becomes large, g_0 becomes very large and it is understood that the degree of power amplification of 10^6 order can be easily attained.

---

7. Construction of an X-Ray Counter Spectrometer for the Studies of Polymers

Yasuhiko NUKUSHINA

(Sakurada Laboratory)

Details of the construction and experimental techniques in the application of an X-ray counter spectrometer for the studies of amorphous and crystalline polymers have been given. As preliminary experiments cellulose fibers such as rayon and ramie, polyisobutylene and polyvinyl alcohol have been used.