tration will exist and further breakages in the vicinity of the first will be likely. If $dt > \tau$ the stress will have relaxed and further breakage will be randomly distributed in the sample.

$\tau = s/(N_0 f(x) v)$ should therefore be a condition separating brittle from fibrous fracture.

Clearly, the shape of the fibre breaking strain distribution function, the relative elastic moduli of fibre and resin, the temperature (because the resin modulus is strongly temperature dependent) and the concentration of fibres will all affect the type of fracture. A further factor will be the strength of the interface between fibres and resin. It is hoped to examine these variables in later work.

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How the Intensity of X-Radiation affects the Late Stage Coloration in Very Pure KCl Crystals

SEVERAL authors[1–3] have studied how the intensity of an X-ray beam, E, affects the parameter "a" which defines the rate of generation of the late stage anion vacancies. Mitchell *et al.*[1] have shown that $a \propto E^2$. Abramson and Caspari[2], however, have suggested that for large values of E, a should vary linearly with E and for low intensities a should vary as E^2. According to Pooley[3], the power x of E in the relation $a \propto E^x$ should be unity for large values of E and should increase to a limiting value of 1·5 on decreasing E. We have made investigations with very pure KCl crystals using the thermoluminescence technique[4] to find the variation of x in the relation $a \propto E^x$ for low and high X-ray intensities.

Single crystals of very pure KCl (background divalent cation impurity $\lesssim$ 1 p.p.m.) were grown by the Kyropoulos method[4]. The methods used for X-irradiation, heat treatment and thermoluminescence have been described earlier[4]. A Philips *PW* 1009 X-ray diffraction unit with a Mo target operating at 35 kV and 5, 10, 15 and 20 mA was used for X-irradiation. The X-rays from the Mo target at 35 kV consisted of a mixture of continuous and characteristic radiations with an intense K_α doublet near 0·71 Å and a less intense K_β line at 0·63 Å. The intensity of soft X-rays on the long wavelength side of the K_α doublet falls rapidly. Because of the filtering effect of the mica-beryllium window in the X-ray tube the intensity of the background at 0·8 Å is less than 1 per cent of the intensity of the characteristic radiations at 0·7 Å. So, to reduce the intensity of the continuous beam of X-rays, Al filters (1 mm thick) were used in some of the experiments. The intensity of the X-rays, E, was taken to be proportional to the plate current, I, of the X-ray tube.

Several neighbouring identical slices cleaved from an extremely pure KCl crystal were divided in four sets, each set consisting of about six to eight slices. Each of the four sets of slices was X-irradiated with different X-ray intensity corresponding to 35 kV and 5, 10, 15 and 20 mA plate current, without any filter. Similarly, each of another four sets of slices from the same crystal was X-irradiated with similar plate voltage and plate current values, but the intensity in each of these four sets was reduced by a 1 mm Al filter. The rate of growth of the area Δ_g under the 190° C thermoluminescence peak[4] (corresponding to the bleaching of the second stage F centres) with the time of X-irradiation was studied in each case. From the plots of Δ_g versus the time of irradiation the values of a for each intensity of X-ray were determined.

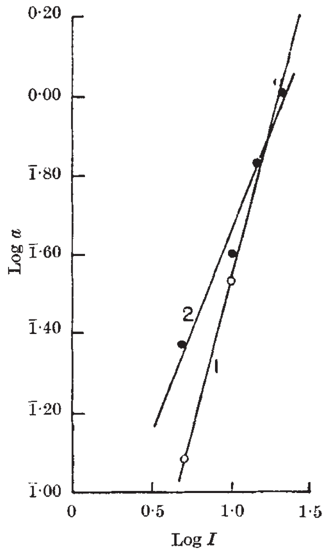

Fig. 1. Log–log plot of a versus I for slices cleaved from a very pure KCl crystal and X-irradiated with (curve 1) and without (curve 2) an Al filter.

The log log plots of a versus the X-ray tube current I for the slices X-irradiated with and without an Al filter are shown as curves 1 and 2 of Fig. 1. Because the intensity of X-rays, E, is proportional to the tube current, I, the slopes of these two curves have the same values as if log a had been plotted against log E. From the slope of the straight line plots, it is found that for slices X-irradiated with 1 mm Al filter (for lower X-ray intensities)

$$a \propto E^{1.6}$$

and for slices X-irradiated without a filter (that is, for comparatively higher X-ray intensities)

$$a \propto E^{1.1}$$

The results obtained by thermoluminescence measurements are thus in agreement with the results of Abramson and Caspari[2] as well as those given by Pooley[3].

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Bute Inlet Wax

BUTE Inlet is one of the larger fiords on the mainland coast of British Columbia: it discharges into a complex system of channels at the north end of the Gulf of Georgia at a latitude of about 50° 30′ N. During unusually cold winters a yellowish wax-like substance has been observed floating on the waters of the inlet[1]. The natural occurrence of lipid material in massive form is of possible interest in relation to the elaboration of petroleum and