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**INTRODUCTION:** Transmission positron images have been obtained at Teikyo University of Science and Technology using a sealed  $^{22}\text{Na}$  of 100 micro Ci. At Research Reactor Institute, Kyoto University (KRR), we obtain transmission electron images using  $^{204}\text{Tl}$ .  $^{22}\text{Na}$  emits “white positrons” (beta plus decay) and  $^{204}\text{Tl}$  emits “white electrons” (beta minus decay). At KRR, 200 kV transmission electron microscope was also used to obtain up to 200 kV transmission images. The PSL/electron is measured as a function of acceleration voltage..

**EXPERIMENTS:** An imaging plate was placed instead of a film in the electron microscope at KRR).

**RESULTS:** Figure 1(a), (b), and (c) show imaging plate images. Each image is the one corresponding to film numbers 8, 3 and 14 in Table 1.

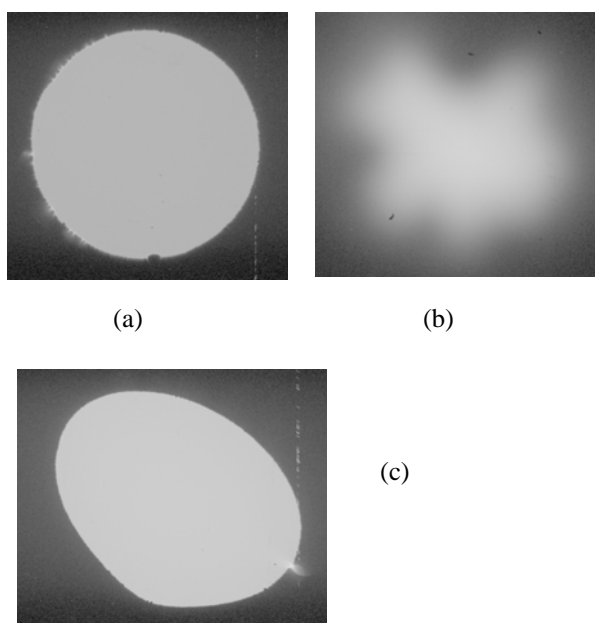


Fig. 1. Imaging plate images using 200 kV electron microscope at KRR.

The experimental results are shown in Table 1. The value of PSL is the sum of PSL value over all pixels on one sheet of an imaging plate. The number of electrons arriving imaging plate is calculated as

$$Ne = (\text{Current}) \times (\text{Exposure time}) / e$$

Where  $e$  is the electric charge of an electron =  $1.6 \times 10^{-19}$ . [C].

Film No.	Acc. Voltage(kV)	Current (pA)	Exp.Time (s)	PSL (10**6)
1	8.58	4.07	6.1	2.62
2	9	4.05	5.81	2.55
3	9.38	5.44	7.56	2.77
4	9.9	4.02	7.24	4.02
5	10.5	4.08	8.77	3.05
6	11.4	4.3	7.92	3.79
7	12.47	4.09	8.95	3.72
8	14.12	3.97	8.55	4.53
9	15.7	4.06	8.32	4.78
10	17.89	4.09	7.06	5.05
11	20.14	4.11	7.67	5.38
12	23.15	3.94	8.46	6.01
13	29.6	4.04	8.35	7.52
14	45.9	4.11	8.75	8.49
15	58.02	4.05	9.32	9.12
16	8.22	5.48	3.095	2.21

Table 1. Experimental conditions and results for 16 films.

Fig. 2. shows PSL/Ne -vs- V (Acceleration voltage). The relation can be expressed as

$$\text{PSL/Ne} = 5.66 \times 10^{-3} (V)^{1/2}$$

The solid line in the figure is a fitted one of above empirical formula to the experimental results. The fitting is satisfactory and PLS value normalized by the electron number seems to be proportional to the square root of the kinetic energy of electrons.

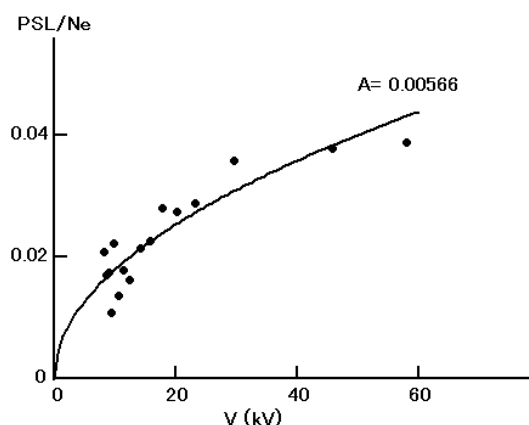


Fig. 2. A plot of PSL/Ne against acceleration voltage.