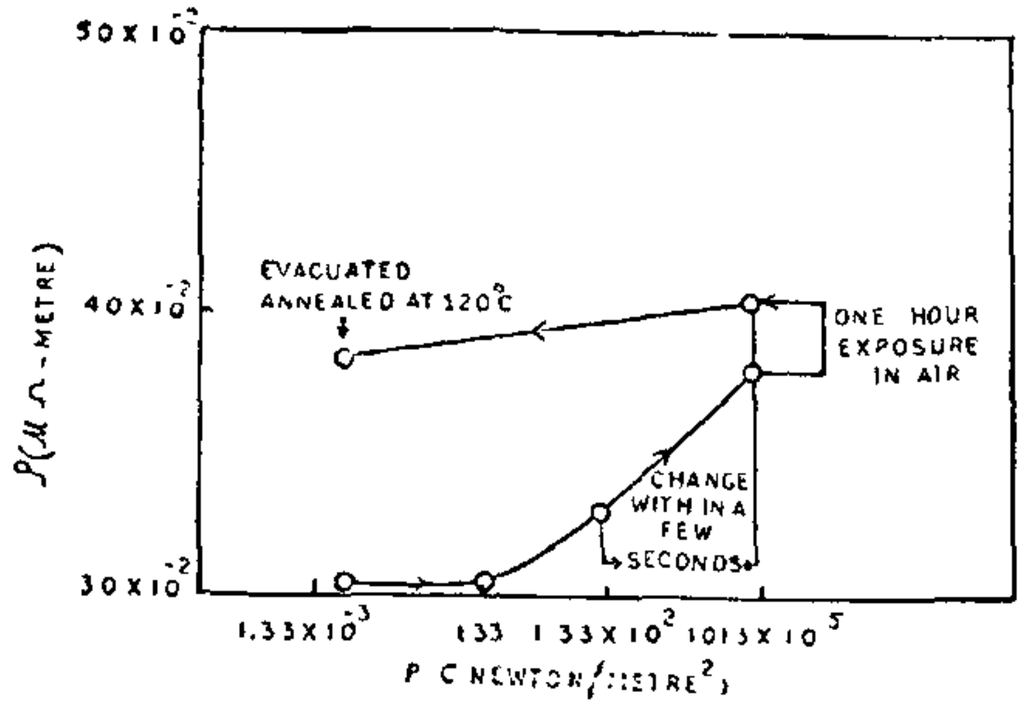

FIG. 2. The dependence of the resistivity (ρ) of a copper film (thickness = 300 Å) on the residual atmosphere at room temperature (30° C).

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1. Fuchs, K., *Proc. Cambridge Phil. Soc.*, 1938, **34**, 100.
2. Sondheimer, E. H., *Adv. Phys.*, 1952, **1**, 1.
3. Garcia, N., Kao, Y. H. and Strongin, M., *Phys. Rev., B*, 1972, **5**, 2029.
4. Pal, A. K., De, U. and Sen, Paramita. *Phys. Stat. Soc.* (*a*) 1975, **27**, K. 1.
5. —, Sen, Paramita and Barua, A. K., *Thin Solid Films*, 1975, **25**, p. S. 25.
6. Murugulesch, I. G. and Ionescu, C. I., *Thin Solid Films*, 1975, **28**, p L. 35.

DIRECT SPECTROPHOTOMETRIC ESTIMATION OF CADMIUM

THE literature survey reveals that there is hardly any direct spectrophotometric methods of analysis of cadmium. The present communication reports the direct spectrophotometric estimation of cadmium with 5, 6-dibromo, 2, 3, 4-trihydroxyacetophenone (DBTHAP). The method is very simple and gives satisfactory quantitative results.

The bluish green coloured complex has a maximum absorbance at 590 nm in the pH range 9-10. The colour of the complex is stable for 20 minutes. Beer's law was varified between 20 and 90 p.p.m. of Cd(II). The molar composition of the complex as obtained from Job's method of continuous variation was found to be 1:1. The molar extinction coefficient was found to be $1{\cdot}1625 \times 10^3$. Sandell's sensitivity is $0{\cdot}1\ \mu g/cm^2$ for $\log I_0/I = 0{\cdot}001$. The optimum concentration range for the effective determination of Cd(II), evaluated from Ringbom's plot was found to be 36 p.p.m. to 54 p.p.m.

The polarographic study of the cadmium—DBTHAP complex shows a transient existence of Cd_2^{2+}. The fact that the complex is not very stable probably explains Cd_2^{+}—DBTHAP complexation, which dissociates and cadmium is hydrolysed after some interval of time.

Interference Due to Other Ions

The effect of diverse ions was studied by adding to Cd^{2+} solution various ions ten times in excess. Ions like Hg^{2+}, Cu^{2+}, Zn^{2+}, Pd^{2+}, Ni^{2+}, Ba^{2+}, Sr^{2+}, Ti^{4+}, UO_2^{2+}, Cl^-, Br^-, I^-, CH_3COO^-, ClO_4^-, SO_4^{2-}, NO_2^-, MoO_4^{2-} do not interfere. However, ions like V^{5+}, Tl^{3+}, Ca^{2+}, $Cr_2O_7^{2-}$, BiO_3^-, $S_2O_3^{2-}$ interfere seriously and therefore should be absent. Cations like Bi^{3+} and Pb^{2+} precipitate under the experimental conditions.

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KINETICS OF POLYMERIZATION INITIATED BY MANGANESE(III) ACETATE

MANGANESE(III) ACETATE has been employed as one-electron oxidant for organic substrates and the mechanism of oxidation is well established[1]. Some redox systems, manganese(III) acetate-substrate, have been used to study the kinetics of polymerization of vinyl monomers[2]. But there is no report in literautre about the use of maganese(III) acetate alone as thermal and photochemical initiator of polymerization. For the first time the present study reports some aspects of manganese(III) acetate initiated polymerization of acrylamide.

Acrylamide (S.D's laboratory reagent) was recrystallised using chloroform. All the reagents used were A.R. in quality. Kinetic experiments were conducted in glass vessels (of capacity 80 ml) with an inlet and an outlet. The solutions of monomer, acid (H_2SO_4) and sodium bisulphate were deaerated for about 45 minutes. Sodium bisulphate was added to maintain constant ionic strength. Manganese(III) acetate was added after the solutions attained bath temperature. The rate of disappearance of monomer was estimated by bromometry and the rate of disappearance of