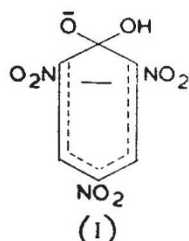


solution is stood at room temperature for long days, cannot be ascribed to picrate anion.

When 1,3,5-trinitrobenzene and its derivatives in water are treated with sodium hydroxide, red solutions are immediately formed. These red colours have been ascribed to complexes such as [trinitrobenzene·OH]<sup>-</sup> (refs. 1 and 2). It has been reported by Kimura<sup>3</sup> that picric acid in a mixture of acetone and ethanol gives an intense 410-m $\mu$  band and a weak 485 m $\mu$  one when a drop of sodium hydroxide solution is added, owing to formation of [picric acid·CH<sub>2</sub>·COCH<sub>3</sub>]<sup>-</sup>. The intense 390 m $\mu$  band of picric acid in aqueous concentrated solution of sodium hydroxide may be expected to be due to a complex of [picrate anion·OH]<sup>-</sup>, which seems possibly to be the ion (1) of Meisenheimer's type<sup>4</sup>.



The spectra were measured with a Hitachi EPU-2 spectrophotometer.

I wish to thank Prof. Y. Nomura for helpful discussions.

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<sup>1</sup> Abe, T., *Bull. Chem. Soc. Japan*, **32**, 339 (1959).

<sup>2</sup> Abe, T., *Bull. Chem. Soc. Japan*, **33**, 41 (1960).

<sup>3</sup> Kimura, M., *Pharm. Bull. (Japan)*, **3**, 75 (1955).

<sup>4</sup> Meisenheimer, J., *Ann. der Chemie*, **323**, 205, 214, 241 (1902).

### Generation of Aerosols by Vapour-Phase Polymerization of Methyl Acrylate

THE particle generator made by us is the outgrowth of work by Melville<sup>1</sup>, in which he studied the photo-polymerization of methyl acrylate and methyl methacrylate vapour at low pressures in a closed chamber in which no other gas was present. On irradiation with ultra-violet light in the 2500 Å. region, a fairly dense cloud of particles is formed in the chamber. The ultra-violet light activates the monomer and small nuclei are formed, that is, a few molecules of polymer on which the remaining monomer gas can react. Once the reaction is initiated, it will continue without further irradiation.

We have found that this process can also be carried out in a flow system (Fig. 1) at atmospheric pressure so long as oxygen is excluded. Ordinary cylinder nitrogen gas was passed over freshly distilled monomer and mixed with a larger volume of nitrogen gas. It then entered a quartz tube of 3 cm. internal diameter where a beam of ultra-violet light was focused on it from a Hanovia type A, 500-W. high-pressure mercury arc lamp. The gas flowed past the light source at 0.1–0.5 cm./sec. Visible aerosols that exhibited higher-order Tyndall spectra were produced, indicating a fair degree of monodispersity. The methyl acrylate gave solid particles, while the methyl

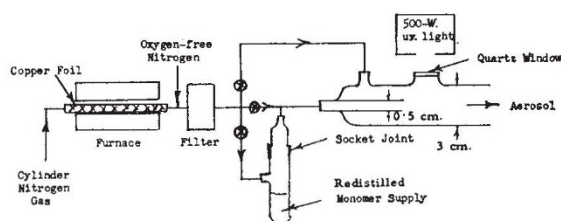


Fig. 1. Methyl acrylate particle generator

methacrylate produced liquid particles. Neither materials seemed to be stable in the electron microscope, but dark-field microscopy showed uniform particles ranging from 0.1 to 2.0 $\mu$ , depending on the concentration of vapour and rate of flow.

The most difficult problem was the formation of polymer on the walls of the quartz tube, which prevented the short-wave radiation from reaching the monomer vapours. Some work was done with a vapour-free gas sheath to keep the polymer off the wall. However, due to the low rate of production of particles and the other problems mentioned above, the work was discontinued in favour of other devices for the production of homogeneous aerosols of sub-micron dimensions.

The work is presented here in the hope that it may stimulate others, who are not confronted by immediate practical needs, to follow up on this rather interesting variation on aerosol generators.

We acknowledge the guidance of Dr. S. Katz, who suggested this approach to the problem. The work was supported by the Air Force Cambridge Research Center, Bedford, Massachusetts (Contract No. AF 19(604)-2411), as part of a programme on electrostatic size classification of sub-micron aerosols.

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<sup>1</sup> Melville, A. W., *Proc. Roy. Soc., A*, **167**, 90 (1938); *A*, **163**, 511 (1937).

### Determination of Nonanol Residues in Potatoes

A NEW method for the destruction of potato sprouts in the course of potato storage is ventilating with air containing nonanol in the amount of 0.1 mgm. per litre<sup>1</sup>. By applying this British method in our country we were very interested in the determination of nonanol in the ventilation air as well as in the potatoes after being treated in this way. The nonanol used is the branched isomer 3,5,5'-trimethylhexanol-1, produced by Imperial Chemical Industries, Ltd.

For the determination we use Feigl's spot test for the alcoholic hydroxyl group using the reagent vanadium oxinate<sup>2</sup> quantitatively, as has also been discussed by others<sup>3-5</sup>. We are applying this reaction using solid vanadium oxinate as reagent in a toluenic solution of nonanol.

The reagent vanadium oxinate is prepared by mixing a solution of 15 gm. 8-hydroxyquinoline in 600 ml. acetic acid (6 per cent) and a solution of 2.3 gm. sodium meta-vanadate (NaVO<sub>3</sub>·4H<sub>2</sub>O) in 600 ml. water. After 1 hr. the precipitate is filtered