Preparation of Concentrated Deuteriobromic Acid *

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Deuteriobromic acid has always been prepared by dissolving deuterium bromide obtained either by union of the elements at 600° C or by the action of D_2O upon PBr_3 [1] in D_2O. In the latter method one-half of the deuterium is lost as $(DO)_3P$. In Pascal's treatise on inorganic chemistry [2] directions are given for the preparation of hydrobromic acid by adding bromine to sulphur and pouring the resulting SBr_4 onto water. The reference given in the treatise is wrong, and we have been unable to locate the correct one.

This note describes the preparation of concentrated deuteriobromic acid from bromine, sulphur and deuterium oxide by a modification of the procedure described in Pascal's treatise.

A mixture of 40 ml (120 g; 0.75 mole) of bromine dried over P_2O_5 and 8.0 g of sulphur was added to 160 ml of 99.8 % deuterium oxide while stirring over a period of 3 hr. The solution of acid gradually warmed up to 55° and was finally heated to 90° C under a reflux condenser. In some runs a small amount of sulphur had to be added to remove residual bromine. When colourless, the reaction mixture was distilled on the vacuum line from a water-bath kept at 45-50° C into a trap cooled to −25° C. The yield of deuteriobromic acid was 266 grams. Sixteen ml of concentrated D_2SO_4 remained in the flask as residue. Constant boiling deuteriobromic acid is obtainable by fractional distillation of the distillate.

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REFERENCES

1. BREUER, G. — Handbook of Preparative Inorganic Chemistry, Vol. 1, 131.
2. PASCAL, P. — Nouveau Traité de Chimie minérale, Tome XVI, p. 381.

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