FREEZING CURVES OF THE SYSTEMS BENZENE-ETHER AND BENZENE-ACETONE.

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The System Benzene-Ether. The melting points of the mixtures of benzene and ethyl ether was studied by Pickering.[1] But his results is not complete one and want the part of 80–100 percent ether.

My apparatus for the measurement of the freezing point of the mixture was very similar to that usually used in the determination of the freezing point depression of dilute solutions. Special precautions, however, were taken to prevent the introduction of water vapour into the liquid mixture. 10–15 c.c. of liquid mixture was introduced into a glass tube in which a pentane thermometer and a stirrer were inserted. The tube was cooled from outside with cooling agent such as solid carbon dioxide or liquid air. To regulate the rate of cooling of the liquid, the tube was protected with a partially evacuated Dewar vessel which then dipped into the cooling agent. A pentane thermometer having the certificate of the "Physikalisch-Technische Reichsanstalt" was used for the measurement of low temperature. This kind of thermometer however, cannot be used to measure the temperature in greater accuracy than half a degree. Moreover the correction of reading for the exposed thread of pentane amounted to a few degrees in some cases, so this must be taken into consideration in the determination of freezing point.

The results of the measurement were as follows.

Mol % of ether.	Freezing point.	Mol % of ether.	Freezing point.
	°		°
0 (pure C_6H_6)	+ 5.1	74.5	− 61.3
5.1	+ 1.7	80.3	− 71.7
7.0	+ 0.4	82.0	− 74.5
14.9	− 4.3	82.3	− 79.
16.0	− 4.8	85.1	− 88.5
25.1	− 11.2	87.7	− 94.
30.6	− 14.9	90.4	−105.
35.1	− 18.6	91.3	−106.
39.5	− 22.6	92.4	−115.5
44.9	− 27.0	92.7	−118.5
49.6	− 33.0	94.8	−126.5
55.0	− 36.9	94.9	−126.5
59.6	− 43.4	97.1	−125.
64.1	− 48.0	97.6	−124.5
69.7	− 52.5	100. (pure $C_4H_{10}O$)	−123.5 (metastable form)

(1) Pickering, *J. Chem. Soc.*, 63 (1893), 998.

Graphically it becomes as Fig. 1.

The System Benzene-Acetone. The method of measurement is quite the same as the system mentioned above. The results were as follows.

Mol % of acetone.	Freezing point.	Mol % of acetone.	Freezing point.
0 (pure C_6H_6)	+ 5.1°	81.8	− 61.°
21.3	− 5.	84.2	− 68.
33.4	− 15.	86.0	− 72.
46.7	− 22.	89.1	− 83.
52.0	− 25.	89.9	− 87.
59.5	− 32.	96.6	− 96.0
69.1	− 40.	100. (pure C_3H_6O)	− 94.8

It is shown graphically in Fig. 2.

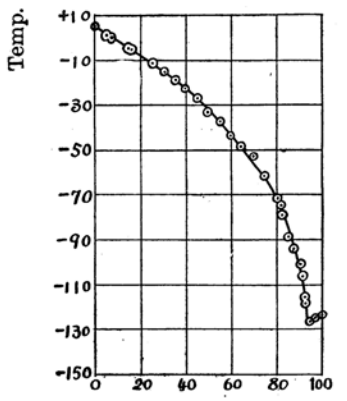

Fig. 1.

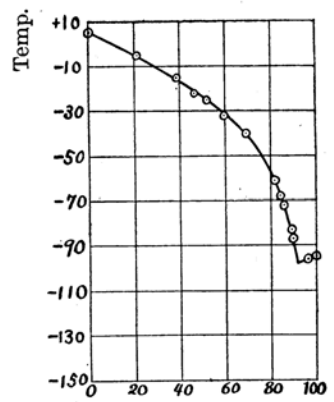

Fig. 2.

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