THE DIELECTRIC CONSTANT OF LIQUID HYDROGEN IODIDE

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In 1909 Schaefer and Schlundt¹ reported the following values for the dielectric capacity of liquid hydrogen iodide: 2.90 at 22°, 2.88 at —50°, and 3.95 at —70° for the solid. The greater value of the solid as well as the zero temperature coefficient of the liquid are exceptional, and therefore cast doubt upon the above values.² We have now made another series of measurements with the Drude-Schmidt apparatus formerly used, and have obtained values that are in accord with the general variations in dielectric capacity with temperature and condition. The following values were obtained: 2.65 at 19°, 3.61 at —50°, and 3.05 for the solid at —70°. These values represent the average of three determinations in cells of somewhat different electric capacities. It is seen that the dielectric constant increases with lowering of temperature by approximately 0.5 percent per degree and that the solid has a lower value than the liquid.

The samples of hydrogen iodide used for the measurements were nearly colorless, and had been redistilled *in vacuo*.

To reduce the possible displacement of the electrodes of the cells as a result of volume changes that accompany solidification and fusion, new cells with heavier platinum wires were used. After all we are still somewhat doubtful about the accuracy of the value found for hydrogen iodide in the solid state.

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¹ Jour. Phys. Chem. **13**, 669 (1909).

² Kraus and Bray: Jour. Am. Chem. Soc. **35**, 1420 (1913).