

POLYMORPHISM IN MONOBROMOACETIC ACID AND THE  
DIAGRAM OF STATE OF DICHLOROACETIC ACID AT  
ELEVATED PRESSURESAugustus R. GLASGOW (1,2) and Jean TIMMERMANS (3)

## ABSTRACT

Piezometric measurements to 5000 atmospheres have shown that dichloroacetic acid occurs in only one crystalline form; monobromoacetic acid exists in three forms with triple points at about 50.5°C and 120 kg/cm<sup>2</sup> (liq, C I, C II) and 53°C and 260 kg/cm<sup>2</sup> (liq, C II, C III). The transitions C I to C II and C II to C III have negative temperature-pressure coefficients ( $dT/dP$ ) and occur only at elevated pressures. No example has been previously reported of an organic compound which has two successive solid transitions with negative  $dT/dP$  coefficients such as were observed for monobromoacetic acid.

Values of  $dT/dP$ ,  $\Delta H$ , and  $\Delta S$ , calculated from the piezometric data are given for the fusion of dichloroacetic acid and for the two solid transitions and the fusion (C III, liq) of monobromoacetic acid. An evaluation of purity of the acids from time-pressure data is discussed.

## 1. INTRODUCTION

This report is one of two papers [1] (4) resulting from an investigation conducted at the Université Libre de Bruxelles on the polymorphism of halogenated acetic acids. In this investigation, monobromo- and

(1) A portion of the thesis submitted by Augustus R. Glasgow in partial fulfillment of the requirements for the Doctorate Degree in Chemical Sciences, Université Libre de Bruxelles, 1957.

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(4) Numbers in brackets refer to literature references at the end of this paper.