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Letter to the Editor

Comments on a paper describing elution order shifts of halogenated compounds

Sir,

We noticed the shifts in the order of elution of the 1,1,1,2-tetrabromoethane and the trichloromethane graphed in Figs. 6 and 7 in the article by Castello *et al.*[1], entitled "Gas Chromatographic Separation of Halogenated Compounds on Non-Polar and Polar Wide Bore Capillary Columns". We wondered how the elution order of chemically similar compounds could be affected so markedly by temperature.

We were disturbed by the apparent similarity of retention of 1,1,1,2-tetrabromoethane and trichloromethane. In researching their boiling points further, we found that the listed boiling point of the 1,1,1,2-tetrabromoethane in Table II is its reduced pressure boiling point, although this fact is not stated in the table. According to the data on page C-265 in the 66th edition of the *CRC Handbook of Chemistry and Physics*, the boiling point of 1,1,1,2-tetrabromoethane at 18 mmHg is 112°C, the value listed in Table II. By analogy with the 1,1,2,2-isomer (atmospheric pressure boiling point 243.5°C as certified by the same reference, which also listed a boiling point of 114°C at 10 mmHg), the atmospheric pressure boiling point of 1,1,1,2-tetrabromoethane is expected to be above 200°C, and it should not elute in the vicinity of chloroform. This is despite recognizing that the Supelcowax-10 column is not a boiling point column.

We noticed that Table II indicates that 1,1,2,2-tetrabromoethane was apparently not eluted within the chromatographic timeframe on this column (see Table II). We would expect the chromatographic behavior of the two tetrabromoethane isomers to be similar on this column. Therefore, we believe that compound No. 1 is not eluting from their column, and the peak they are ascribing to it may be an impurity, chromatographic decomposition product, or altogether unrelated compound.

This observation bears on the understanding of the underlying mechanism for the elution order shift described in Figs. 6 and 7. The peak ascribed to the tetrabromoethane may in fact have totally different functionality, making its elution shift with respect to the chloroform perfectly reasonable.

Air Products and Chemicals, Inc.,
7201 Hamilton Blvd.,
Allentown, PA 18195, U.S.A.

DAVID M. PAREES*
DANIEL L. VASSILAROS

1 G. Castello, A. Timossi and T. C. Gerbino, *J. Chromatogr.*, 454 (1988) 129–143.

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