

## Laboratory Notes

*J. Appl. Cryst.* (1979). **12**, 261

### A comment on 'A simple method for measuring crystal densities' (Zamvil, Pludow & Fucaloro, 1978)

Zamvil, Pludow & Fucaloro (1978) suggested a rapid method to measure the density of a liquid mixture by determining the refractive index of that mixture, and obtaining its density from a calibration table. However they selected benzene/ethanol mixtures whose densities range from 0.7999 to 0.8671 Mg m<sup>-3</sup>. Midgley (1951) recommended the use of methylene iodide-benzene mixture which gave a density range from 0.877 to 3.316 Mg m<sup>-3</sup>. However he stated that 'the refractive index and density of liquid mixtures are approximately proportional to the quantity of each component'.

We have tried to apply this method to other mixtures but found the relationship to have a limited linear range (Table 1).

Table 1. *Density and refractive index for some solution mixtures*

	$\rho$	$n(20^\circ)$
Chloroform-toluene	1.20-1.42	1.470-1.450
Methyliodide-chloroform	1.55-1.98	1.450-1.495
Bromoform-methyliodide	2.33-2.60	1.540-1.575

Zamvil, Pludow & Fucaloro (1978) said that it was necessary to have a knowledge of the mixture composition so that the Lorentz-Lorenz relation could be used. However, because this information is not always readily available, the practical way, as referred to by Midgley (1951), of preparing a calibration curve of refractive index against density is recommended.

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(Received 18 September 1978;  
accepted 7 November 1978)

## References

Midgley, H. G. (1951). *Acta Cryst.* **4**, 565.  
Zamvil, S., Pludow, R. & Fucaloro, A. F. (1978). *J. Appl. Cryst.* **11**, 163.

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### The use of ultrasonics for cleaning crystals

Currently, ultrasonic cleaners are being used in chemical laboratories for cleaning glassware. However, they may also be used for cleaning both large and small single crystals for diffraction purposes. Trials with a variety of hydrophilic and hydrophobic substances (Tutton's salts, pesticides, etc.) were carried out with crystals having surface impurities. These crystals were added to a test tube containing some inert solution (water in the case of hydrophobic organic compounds), the test tube was then suspended within a basket in the tank of an ultrasonic cleaner (made by Branson Ultrasonics Corporation, Parrott Drive, Shelton, Connecticut 06484, USA) and the current turned on. The time for successful cleaning varied from five minutes to two hours depending on the inert solution, number of surface impurities, types of compounds, and size of crystal. Heat is generated in the process and may in some cases irreversibly alter the crystal being cleaned. The sound (50-55 kHz) used is said to create microscopic bubbles which expand and collapse. This cavitation process is alleged to scrub the crystal and consequently care must be taken to prevent either complete dissolution of the crystal or etching of the surface. In some cases wetting might be a problem and may be overcome by adding a suitable detergent. Although this was recommended by the manufacturer, it was not tried. The ultrasonic method of cleaning crystals works but requires considerable care in its application to prevent dissolution of the crystal.

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(Received 18 September 1978;  
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## International Union of Crystallography

*J. Appl. Cryst.* (1979). **12**, 261

### Eleventh International Congress of Crystallography: Communicated Abstracts: Supplement to Acta Crystallographica

The abstracts of papers communicated to the Eleventh International Union of Crystallography, Warsaw, Poland, 3-12 August 1978, have been published as a Supplement to *Acta Crystallographica*, Section A. Defects in the binding of many copies of the Supplement have delayed its publication considerably. Although the Supplement is numbered Part S4 of Volume A34 and is dated 1 August 1978, the copies were not received from Poland by Munksgaard for distribution to subscribers until 15 January 1979. One copy of the Supplement has now been sent to every subscriber to the Union's journals, whether they subscribe to one or both journals. The Union regrets any inconvenience caused by the delay in publication of the Supplement.

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### Dimensions of Material Deposited under the Supplementary Publication Scheme

The specification of the dimensions of material for deposit, given in *Notes for Authors* [*Acta Cryst.* (1978). **A34**, 149], has led to some confusion. In future, the dimensions of all text and tables intended for deposit should not exceed the dimensions of the A4 International Paper Size (210 × 297 mm), although the paper size may be greater. In the case of graphical material, under exceptional circumstances illustrations of greater dimensions (up to 390 × 285 mm) may be acceptable.

## Crystallographers

*This section is intended to be a series of short paragraphs dealing with the activities of crystallographers, such as their changes of position, promotions, assumption of significant new duties, honours, etc. Items for inclusion, subject to the approval of the Editorial Board, should be sent to the Executive Secretary of the International Union of Crystallography (J. N. King, International Union of Crystallography, 5 Abbey Square, Chester CH1 2HU, England).*

**Fritz H. Laves** died on 12 August 1978. A full obituary by **H. Jagodzinski** has been published in the March issue of *Acta Crystallographica*, Section A, page 343.