

Modification of calculation of mineral unit cell contents

A SIMPLE modification can increase the versatility of the FORTRAN computer programme for the 'Calculation of mineral unit cell contents' (Howarth, 1966, p. 787). If the list of oxides for each chemical analysis is followed by a floating point number denoting the unit cell content of oxygen atoms, the programme can be adapted to calculate the results according to the values for different minerals without substitution of cards in the source programme. This enables a variety of minerals to be processed in one batch and permits the storing of the programme on disc or magnetic tape, saving valuable computer time. By an additional simple modification the programme can also be used to recalculate chemical analyses of rocks to a base of 100 cations.

In subsequent calculations of norms from the same data, the oxygens per unit cell number serves to identify the type of mineral so that the norm can be modified for special cases. For example, in an olivine analysis which is deficient in silica but contains alumina the alumina could be calculated as hercynite or picotite as these are frequently found as inclusions in olivine.

These features are incorporated in a computer programme developed in FORTRAN II D for the IBM 1620 computer at the University of St. Andrews. The programme was originally written in KDF 9 ALGOL for use on the English Electric KDF 9 computer at the University of Glasgow.

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Reference

HOWARTH (R. J.), 1966. Calculation of mineral unit cell contents: FORTRAN computer programme. *Min. Mag.*, vol. 35, p. 787.

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On the determination of 2V

IN a recent article (Ehlers, 1966) describing a method of bringing a crystal into the Berek position for indirect determination of 2V, a preliminary part of the procedure (p. 959) discussed a technique of putting the crystal into the cardinal position. Professor D. Jerome Fisher

(*pers. comm.*) has pointed out that this portion of the procedure is incorrect, and it is here suggested that the method described by Hartschorne and Stuart (pp. 417-419, 1960) be used to determine the initial orientation of the three principal optical directions. Using the plotted orientations as a guide, the crystal may be put into the cardinal position in the following manner. One principal optical direction is first oriented horizontal and EW by appropriate rotations about the IV and NS axes. The crystal is then brought into the cardinal position by appropriate rotation about the EW axis. It is not necessary to utilize either the outer vertical or microscope axis for this procedure. From this orientation, reference to table I (*ibid.*, 1966) indicates the rotations necessary to bring the crystal into the Berek position. The technique may be used most effectively on the 3-axis stage.

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References

- EHLERS (E. G.) 1966. *Min. Mag.*, vol. 35, p. 958.
HARTSHORNE (N. H.) and STUART (A.) 1961. *Crystals and the polarizing microscope*, Edward Arnold Ltd., London.

[*Manuscript received 2 February 1967*]

*Amesite from the silver mines of Hällefors,
central Sweden*

AMESITE occurs in the silver mines of Hällefors as short hexagonal prisms with arsenopyrite in zinc ore. The chemical composition is: SiO₂ 34.74 %, Al₂O₃ 15.80, FeO 3.15, MnO 0.13, MgO 32.81, CaO tr., H₂O 13.13, sum 99.76 %; sp. gr. 2.65, α 1.578. A detailed description will be included in a forthcoming publication on the minerals of the silver mines.

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