The results thus strongly indicate that microhardness studies of solid solution series might be utilised in detecting structural breaks and compositional variation.

Limitation

The obvious limitation of this technique is that although 20 random grains were examined in each case, the highest value obtained might not represent the maximum hardness. However in all cases the ranges of hardness of each species are so widely apart, compared to the range of hardness variation of a mineral with varying orientation, that this limitation does not seem to affect the general observations and conclusions.

References

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LATTICE CONSTANTS AND PROBABLE SPACE GROUP OF ANHYDROUS CUPRIC SULFATE (ARTIFICIAL CHALCOCYANITE)*

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Anhydrous cupric sulfate was prepared by heating Baker and Adamson Reagent Grade $CuSO_4 \cdot 5H_2O$ to approximately 300° C. for two hours. The *x*-ray powder diffraction pattern at 25° C. was obtained in a Norelco high angle recording diffractometer, using CuK_α radiation ($\lambda = 1.5418$ Å) and a Ni filter. The scanning speed was $\frac{1}{8}°$ (2θ) per minute.

The indexing was done by means of the similarity to the zinc sulfate pattern (Schiff, 1934) and by using the goniometric value for the axial ratios of natural chalcocyanite, which is orthorhombic dipyramidal (Dana's system, 1951). All the observed diffraction peaks could be satisfactorily assigned as being due to an orthorhombic lattice with the following unit-cell dimensions, obtained by a least-squares treatment: $a_0 = 8.391 \pm .013$ Å, $b_0 = 6.811 \pm .010$ Å, $c_0 = 4.791 \pm .008$ Å.

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TABLE 1. POWDER DATA FOR $CuSO_4$

$d_{obs.}$ (Å)	$d_{calc.}$ (Å)	*hkl*	100 I/I_0
4.163	4.161	101	73
3.911	3.919	011	5
3.537	3.551	111	100
3.408	3.406	020	4
3.163	3.156, 3.156	201, 120*	5
2.614	2.644, 2.635	220, 121	92
2.415	2.415	301	71
2.316	2.315	221	9
2.297	2.304	102	13
2.088	2.080	202	9
2.053	2.052	031	3
1.997	1.997, 1.990, 1.993	230, 212, 131	6
1.969	1.970	321	6
1.959	1.959	022	20
1.773	1.775	222	35
1.672	1.673, 1.669	421, 140*	8
1.581	1.584, 1.578, 1.578, 1.576	501, 402, 240, 141	14
1.564	1.569	103	4
1.554	1.555	013	8
1.542	1.543, 1.541, 1.537	511, 430, 412	5
1.434	1.436	521	32
1.430	1.432	422	33
1.398	1.398	600	5
1.376	1.374	502	12
1.306	1.306	033	6
1.290	1.291, 1.294	133, 620	4
1.275	1.274, 1.275	441, 522	4
1.248	1.247, 1.249, 1.249	233, 621, 413	4
1.209	1.208	602	3
1.163	1.163	701	4
1.161	1.160	541	2
1.150	1.152, 1.146	204, 711	5
1.097	1.095, 1.095, 1.096	161, 523, 260	8
1.081–1.072	1.081, 1.075, 1.072	640, 343, 702	8 broad
1.002	1.002	820	3
0.9990	0.9984	460	5
0.9969	0.9965	262	3
0.9856	0.9851	642	4
0.9816	0.9811	821	3
0.9796	0.9796, 0.9802	044, 740*	3
0.9592	0.9587	703	2
0.9562	0.9569, 0.9562	543, 651	4
0.9543	0.9546, 0.9540, 0.9536	633, 244, 071	4
0.9250	0.9247, 0.9255	822, 215	3
0.9229	0.9228	723	3
0.9140	0.9151	901	5
0.8057	0.8051, 0.8061	903, 941	4

The axial ratio $a_0:b_0:c_0=1.232:1:0.7043$ agrees reasonably well with the goniometric value 1.254:1:0.7086, derived from Palache, Berman, Frondel (1951) if their value 0.7971:1:1.1300 is considered to be $b:a:2c$.

The calculated density of artificial $CuSO_4$ at 25° C., assuming $Z=4$, is 3.873 gm/cm^3. The pycnometric density is 3.65 ± 0.05 gm/cm.^{3}

The observed and calculated d-spacings, assigned indices and observed relative intensities are listed in Table 1. Systematic extinctions are $0kl$, $k+l$ odd; $h0l$, none; $hk0$, h odd, or $h+k$ odd. There are three reflections which can be indexed as $hk0$ with h odd. These are marked by asterisks in the table. However in each case there is an alternative indexing $hk0$ with $h+k$ even. Accordingly the space group was chosen as *Pnma*, if $CuSO_4$ is dipyramidal. This is in agreement with $ZnSO_4$; $a_0=8.58$, $b_0=6.74$, $c_0=4.76$ kX, *Pnma* (Schiff, 1934).

References

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Palache, C., Berman, H., and Frondel, C. (1951) Dana's System of Mineralogy, 7th ed., 429 pp., vol. 2: New York, John Wiley and Sons, Inc.

ANNUAL MEETING

The forty-first annual meeting of the Mineralogical Society of America will be held in Denver, Colorado, Monday through Wednesday, October 31-November 2, 1960. Detailed notices will be mailed to all members.

Abstracts of papers to be presented at the annual meeting must be received by the Secretary on or before July 1, 1960. Abstract blanks may be obtained from the Secretary.

Nominations of Officers for 1961

President: E. F. Osborn, Pennsylvania State University, University Park, Pa.
Vice-President: Ian Campbell, California Division of Mines, San Francisco, Calif.
Secretary: George Switzer, U. S. National Museum, Washington, D.C.
Treasurer: Marjorie Hooker, U. S. Geological Survey, Washington, D.C.
Councilors: (1961–63, two to be elected)
Stephen E. Clabaugh, University of Texas, Austin, Texas
Robert M. Garrels, Harvard University, Cambridge, Mass.
William T. Holser, California Research Corporation, La Habra, Calif.
O. F. Tuttle, Pennsylvania State University, University Park, Pa.

FIFTY-PLUS COMMITTEE

The MSA Fifty-Plus Committee now has 158 members who have pledged a total of $11,960 to the Endowment Fund over a five-year period. Formed last year to help build up the Endowment Fund, the Committee has been so successful that the Society is even now benefiting from the investment of the funds. Through May 31, 1960, $6034 had been received. Membership is open to any member or friend of the Society who wishes to pledge not less than $10 a year for a five-year period. If you would like to join, send a card or note to the Treasurer, Marjorie Hooker, U. S. Geological Survey, Washington 25, D. C. The members of the Committee are listed below:

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Adams, John W.
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Galbraith, Frederic W.
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Gillson, Joseph L.
Glass, Jewell J.
Goldich, Samuel S.
Goldsmith, Julian R.
Graf, Donald L.
Grawe, Oliver R.
Green, Robert S.
Grogan, Robert M.
Gruner, John W.
Grunig, James K.
Haff, John C.
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Neuerburg, George J.
Noble, James A.
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Pate, Howard
Pough, Frederick H.
Ramsdell, Lewis S.
Reichen, Laura

* Deceased

Roedder, Edwin W.
Rowland, Richards A.
Runner, Joseph J.
Sampson, Edward
Sampter, E. L.
Schaller, Waldemar T.
Schmidt, Robert G.
Schmitt, Harrison A.
Schortmann, R. E.
Servos, Kurt
Siegrist, Marie
Slawson, Chester B.
Smith, Joseph V.
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Sprague and Henwood
Staples, Lloyd W.
Stern, Thomas W.
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Stoiber, Richard E.
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Taber, Stephen
Tolman, Carl
Tunell, George
Tuttle, O. Frank
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Waldschmidt, William A.
Weaver, Charles E.
Webb, Robert W.
Weeks, Alice D.
Weiss, E. J.
Wenden, Henry E.
Wherry, Edgar T.
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Woodford, Alfred O.
Wyman, Richard V.
Yntema, Theodore O.

Peacock Memorial Prize

The Walker Mineralogical Club announces that it has awarded its Peacock Memorial Prize (1959) of two hundred dollars "for the best scientific paper on pure or applied mineralogy, including crystallography, mineralogy, petrology, ore genesis, and geochemistry," submitted by a graduate student, to

Dr. John Gittins,
Department of Geophysics and Geochemistry,
College of Mineral Industries, Pennsylvania State University,
University Park, Pennsylvania.

Dr. Gittins' paper was entitled "The Petrology of the Nepheline-bearing Rocks of Glamorgan and Monmouth Townships, Ontario, Canada." He did his work under Prof. C. E. Tilley and Dr. S. R. Nockolds at the University of Cambridge, England. Dr. Gittins emigrated to Canada from Manchester, England, in 1948 and resided in Hamilton, Ontario. Prior to doctoral studies at Cambridge, he attended McMaster University, Hamilton, Ontario, where he earned his B.Sc. in Honour Geology in 1955, and his M.Sc. in 1956.

The Walker Mineralogical Club announces also at this time that it is offering the Peacock Memorial Prize again in 1960.

Franklin-Ogdensburg Mineralogical Society

The Franklin-Ogdensburg Mineral Society is a new organization established to provide a framework for a series of active programs designed to benefit the community, the collector and those interested in the minerals, mineralogy and geology of Franklin and Sterling Hill, New Jersey.

1. To establish, in cooperation with other interested groups, and maintain a sound, permanent museum of Franklin minerals in Franklin, N. J.

2. To develop new information on Franklin minerals and mineralogy, through cooperative scientific programs with universities, and other organizations and individuals.
3. To obtain and make available accurate up-to-date information on Franklin minerals and mineralogy.
4. To facilitate collecting of Franklin minerals while conserving material for future collectors.
5. To facilitate identification of Franklin minerals.
6. To promote fellowship and the advancement of mineralogy and geology by providing meetings of those interested in the Franklin area.

Any adult interested in any of these or related programs is invited to join us. Membership dues of $2.00 or questions concerning the Society may be addressed to:

Franklin-Ogdensburg Mineralogical Society, Inc. Box 146
Franklin, New Jersey

THE INDIAN MINERALOGIST

A copy of the first number (Jan. 1960) of the semi-annual journal of the Mineralogical Society of India, "The Indian Mineralogist," has just been received. This number contains 112 pages of format slightly larger than that of *The American Mineralogist*. The quality of paper, printing, and illustrations (including half-tones and an inset plate) is very good. Our congratulations go to the new Society on this excellent start. The subscription price is Rs. 10/- per year, and articles are invited from everyone. Orders should be sent to the Treasurer of the Mineralogical Society of India, Department of Geology, Karnatak University, Dharwar, India. The contents of this first number is as follows: