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Unit cell and space group of $NiK_2(SO_4)_2 . 6H_2O$.

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No X-ray data have been reported for $NiK_2(SO_4)_2 . 6H_2O$, one of the Tutton salts. Optical studies of Tutton and of Murmann and Rotter (Mellor, 1936) show the blue green prismatic crystals to be monoclinic. Data obtained in this laboratory confirm the symmetry and revise previously reported axial ratios.

The d values and relative intensities given in Table 1 were obtained from X-ray powder photographs using cobalt radiation. Lattice constants were determined by superposition of single crystal reflections of quartz on zero level Weissenberg photographs about the a and b axes. The monoclinic angle was taken from a zero level precession photograph. These data show

$$a = 6{\cdot}130 \pm 0{\cdot}002,\ b = 12{\cdot}185 \pm 0{\cdot}004,\ c = 8{\cdot}991 \pm 0{\cdot}002\ \text{Å},\ \beta = 104^\circ\ 59' \pm 3'.$$

The axial ratios found here are 0·5031 : 1 : 0·7379 as compared to 0·5020 : 1 : 0·7379 by Tutton and 0·4965 : 1 : 0·7374 by Murmann and Rotter (Mellor, 1936). For $Z = 2$ the calculated density is 2·237 g.cm.$^{-3}$ which agrees with the observed density 2·232 g.cm.$^{-3}$ obtained by flotation methods. The single crystal photographs indicate the following conditions for non-extinction: $h0l$ present only for $l = 2n$ and $0k0$ present only for $k = 2n$. The space group therefore is $P2_1/c$–C_{2h}^5.

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Table 1. *Powder diffraction data for* $NiK_2(SO_4)_2 . 6H_2O$

d_o	I/I_0	hkl	d_o	I/I_0	hkl	d_0	I/I_0	hkl	d_0	I/I_0	hkl
6·08	20	020	3·29	20	$13\bar{1}$	2·433	5	$23\bar{1}$	2·063	10	222
5·90	5	100	3·13	15	102			$14\bar{2}$			$24\bar{2}$
5·31	20	110	3·04	30	040	2·386	5	221	2·039	15	024
5·11	10	$11\bar{1}$			112			230	2·000	5	$30\bar{2}$
4·97	5	021	2·962	55	$21\bar{1}$	2·364	50	$13\bar{3}$	1·974	10	$31\bar{2}$
					200						300
4·35	20	002				2·249	5	150			
4·24	15	120	2·870	5	041	2·231	5	$15\bar{1}$	1·917	10	160
4·13	75	111	2·800	20	$20\bar{2}$			$10\bar{4}$	1·881	5	250
		$12\bar{1}$	2·776	15	122	2·182	20	142	1·866	5	$15\bar{3}$
4·03	75	$10\bar{2}$	2·727	15	$22\bar{1}$	2·158	5	212			$11\bar{4}$
			2·672	5	$14\bar{1}$			$24\bar{1}$	1·847	5	$31\bar{3}$
3·82	5	$11\bar{2}$									
3·67	100	031	2·628	5	$12\bar{3}$	2·121	10	240	1·825	5	$33\bar{1}$
3·54	15	121	2·546	5	$22\bar{2}$			$14\bar{3}$			213
		022			211	2·100	5	$04\bar{3}$	1·813	10	$16\bar{2}$
3·35	10	130	2·485	10	042			$12\bar{4}$	1·799	5	$14\bar{4}$
					132	2·090	5	$15\bar{2}$			$33\bar{2}$

Additional lines not listed.

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The beryllides of Ti, V, Cr, Zr, Nb, Mo, Hf, and Ta.*

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A thorough X-ray diffraction study has been made of the beryllides of Ti, V, Cr, Zr, Nb, Mo, Hf, and Ta. Table 1 shows the complete list of intermetallic compounds that are stable or metastable at room temperatures.

Cell dimensions heretofore not reported are given in

* This work was performed under the auspices of the U.S. Atomic Energy Commission.