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X-ray powder data for metahewettite

IN a recent review of the literature, the Joint Committee of Powder Diffraction Standards has been unable to find powder X-ray diffraction data for metahewettite. The mineral was originally described by Hillebrand *et al.* (1914), and its unit cell is given by Qurashi (1961). A crystal structure of a sodian metahewettite has been determined by Bachmann and Barnes (1962). Five hewettite samples (28398, 29683, 29684, 29695, and 31670) and four metahewettite samples (18616, 18618, 26903, and 34689) were obtained from the American Museum of Natural History, New York. Initial X-ray diffraction patterns showed that seven samples are similar and that neither 29684 nor 26903 is hewettite or metahewettite. The best crystalline specimen of 28398 from Monument no. 2 Mine, Monument Valley, Arizona was selected for collection of powder X-ray diffraction data. A diffractometer trace was obtained with Cu-$K\alpha$ radiation (1.5405 Å) and a 0002 graphite monochromator from 4° to 66° 2θ at a scanning speed of 0.125°/min. A least-squares refinement in space group $A2/m(12)$ with the programme of Appleman *et al.* (1972) gave $a = 12.15(1)$, $b = 3.607(3)$, $c = 18.44(1)$ Å, and $\beta = 118° 02'(3)$. The *hkl*, *d* calculated, *d* observed, and relative intensities (I/I_1) are presented in Table I.

The unit cell is similar to that given by Qurashi (1961). Reflections at 3.445 Å ($\bar{1}11$) and 3.103 Å ($\bar{1}13$) have considerably higher intensities in the other specimens examined.

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TABLE I. *X-ray powder data for metahewettite*

hkl	d_{calc}	d_{obs}	I/I$_1$	*hkl*	d_{calc}	d_{obs}	I/I$_1$	*hkl*	d_{calc}	d_{obs}	I/I$_1$
100	10.73 Å	10.67 Å	3	$\bar{3}15$	2.435 Å	2.436 Å	1	208	1.661 Å	1.660 Å	1
$\bar{1}02$	8.76	8.71	4	311	2.390	2.391	1	0.0.10	1.628	1.629	2
002	8.14	8.19	100	106	2.378	2.379	>1	602	1.596	1.594	1
$\bar{2}02$	5.94	5.96	1	$\bar{5}02$	2.366	2.362	1	406	1.573	1.576	2
200	5.36	5.36	12	$\bar{4}13$	2.323	2.327	2	$\bar{2}26$	1.555	1.552	>1
$\bar{3}02$	4.048	4.031	5	$\bar{2}08$	2.293	2.295	17	$\bar{4}24$	1.5415	1.5403	1
$\bar{3}04$	3.676	3.689	3	$\bar{4}11$	2.246	2.247	>1	$\bar{3}26$	1.5345	1.5343	>1
300	3.575	3.578	30	115	2.199	2.206	22	$\bar{3}.0.12$	1.5289	1.5269	2
$\bar{1}11$	3.451	3.445	2	$\bar{3}17$	2.099	2.097	>1	$\bar{4}.1.11$	1.5150	1.5154	>1
111	3.249	3.242	>1	008	2.035	2.033	10	$\bar{5}.0.12$	1.5115	1.5122	>1
$\bar{1}13$	3.110	3.103	6	$\bar{4}17$	2.000	1.994	1	1.0.10	1.5078	1.5069	2
$\bar{2}06$	3.071	3.062	18	$\bar{6}02$	1.948	1.951	1	026	1.5019	1.5027	>1
013	3.004	3.010	3	502	1.869	1.864	1	$\bar{4}20$	1.4964	1.4964	2
$\bar{4}02$	3.000	2.996	>1	$\bar{6}08$	1.838	1.833	1	$\bar{5}.1.11$	1.4830	1.4822	1
$\bar{1}06$	2.985	2.984	3	117	1.801	1.802	4	$\bar{6}.0.12$	1.4607	1.4625	1
$\bar{4}04$	2.970	2.966	>1	$\bar{3}19$	1.781	1.781	1	$\bar{7}19$	1.4597	1.4562	>1
$\bar{3}06$	2.921	2.923	2	$\bar{1}20$	1.778	1.776	>1	$\bar{5}24$	1.4471	1.4482	>1
211	2.815	2.812	24	511	1.754	1.755	1	$\bar{1}.1.11$	1.4390	1.4395	2
204	2.690	2.694	4	$\bar{4}19$	1.747	1.746	1	$\bar{5}22$	1.4343	1.4342	1
$\bar{3}11$	2.647	2.650	>1	$\bar{2}22$	1.726	1.725	>1	$\bar{1}.0.12$	1.4323	1.4301	2
$\bar{4}06$	2.620	2.628	1	$\bar{6}17$	1.694	1.699	>1	$\bar{3}28$	1.4170	1.4165	1
$\bar{1}15$	2.557	2.550	>1	$\bar{5}19$	1.672	1.675	1				

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