LEPIDOLITE FROM NAGATORI, CHIKUZEN PROVINCE, AND THE LITHIUM CONTENT OF JAPANESE MICA.

By Satoyasu IIMORI and Jun YOSHIMURA.

Received September 11, 1926. Published November 28, 1926.

Abundant tiny scaly flakes of silvery white mica of pink shade occuring intimately associated with granular quartz of faint purple or pink colour has been formerly found to be lepidolite at the Nagatori district, prov. Chikuzen, Japan. No chemical investigation having been made before, so the authors has newly determined its constituents. It was, however, not able to obtain material entirely free from the quartz grains, and a portion of the associated mass which contained comparatively small amount of quartz was therefore taken for analysis. It gave the result of the second column in the table below. Now, leaving silica, which was due to the quartz admixed as gangue, out of account the result was recalculated to 100 per cent and the result is given in the third column of the table, showing the true composition of the lepidolite.

TABLE 1.

	(I)	(II)
SiO_2	56.79%	48.59%
Al_2O_3	21.71	26.33
Fe_2O_3	0.73	0.88
FeO	0.14	0.17
MnO	0.46	0.56
CaO	0.26	0.31
MgO	0.13	0.16
K_2O	6.23	7.56
Rb_2O	0.96	1.16
Na_2O	2.45	2.97
Li_2O	1.94	2.35
F	4.69	5.69
H_2O	4.67	5.66
	101.16	102.39
$\frac{1}{2}$ O (equiv. to F)	−1.97	−2.39
Total	99.19	100.00

In the above calculation, the amount of the quartz gangue was so deduced that the atomic ratio of silicon to alkali metals except lithium in lepidolite is generally 3, according to the recent views of A. N. Winchell[1] and A. F. Hallimond.[2] The analyzed mass consisted of about 17% quartz and 83% lepidolite of the composition above indicated. This ratio of lepidolite to quartz matrix in the congregated mass may of course widely vary.

(1) *Am. Jour. Sci.*, 209 (1925), 415.
(2) *Mineralog. Mag.*, 20 (1925), 314.

Next, the content of lithia as well as potassia and sodia in a number of micas found in Japan was determined. The results obtained are given in Table 2.

TABLE 2.

Sample	Locality	Appearance	Alkalis determined			The atomic ratio: (Li/(Na+K))
			Li_2O(%)	Na_2O(%)	K_2O(%)	
Lepidolite	Nagatori.	Small opaque scales of light grains rose colour, associated with quartz	2.49	3.20	9.13	0.56
			1.94	2.70	6.71	0.59
			2.09	2.78	6.28	0.61
Zinnwaldites	Naegi.	Large transp. cryst. of light brown colour.	2.31	5.82	8.35	0.43
	Tanokami.	,, ,, ,, of light purple colour.	4.24	5.00	7.89	0.86
		,, ,, ,, of light brown colour	3.66	2.18	7.52	1.11
			2.44	3.54	10.74	0.48
Biotites	Ishigure	Large opaque cryst. of black colour . . .	0.66	2.22	5.08	0.25
	Tanokami	,, ,, ,, ,, ,, ,, . . .	0.35	0.69	6.72	0.14
		Small ,, ,, ,, ,, ,, . . .	1.20	2.29	6.12	0.39
	Mategata.	Large ,, ,, ,, ,, ,, . . .	0.23	1.62	8.02	0.07
	Hajikano.	Small ,, ,, ,, brown ,, . . .	0.29	1.95	4.57	0.17
	Sanpeyama	Small opaque scales of brown ,, . . .	0.09	3.42	3.99	0.03
Muscovites	Ishigure.	Small opaque scales of silvery white colour.	0.32	0.95	10.03	0.08
	Tanokami.	Large transp. cryst.	0.31	4.10	12.56	0.05
		Large opaque cryst. of silvery white. . . .	0.17	2.74	10.92	0.04
		,, ,, ,, ,, ,, ,, . . .	1.41	1.15	11.60	0.34
	Otsukawa.	Small ,, ,, ,, ,, ,, . . .	0.26	2.20	8.44	0.07
Phlogopite	Kankyo.	Large transp. cryst. of dark green shade .	0.22	2.47	10.30	0.07

It was found that some of the biotites showed fairly high content of lithium. Attention must, however, be called to the constant presence of lithia in all of the specimens analyzed, and it may be mentioned that the lithium is to be one of the common constituents of the mica.

The Institute of Physical and Chemical Research,
Hongo, Tokyo.