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Figure S1. Different outlier rejection method in ICPMSDataCal-Py. A-D are mean \pm 2SD, spline interpolation, linear fit, and Hample, respectively. The light blue area is the uncertainty range and the solid red line is the fitted curve. The black points are outliers determined by different peak filtering schemes.

Figure S2. Five drift fit models in ICPMSDataCal-Py, NISTSRM610 as external standard to correct time drift of Na/Si for a natural silicate mineral. Figures A to E represent linear interpolation, quadratic interpolation, cubic interpolation, linear fitting and average models.

Figure S3. Various quality control diagrams in ICPMSDataCal-Py. Figure A displays the relative error plot between measured values and reference values for reference materials. The gray shaded areas represent error thresholds of 5% and 10%, respectively. The current reference material, BHVO-2G, is highlighted, and relative errors for current

Figure S1

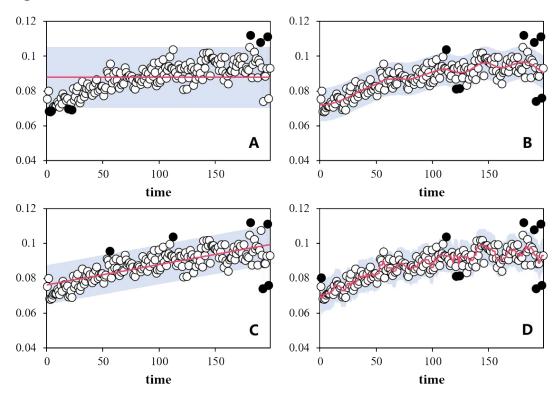
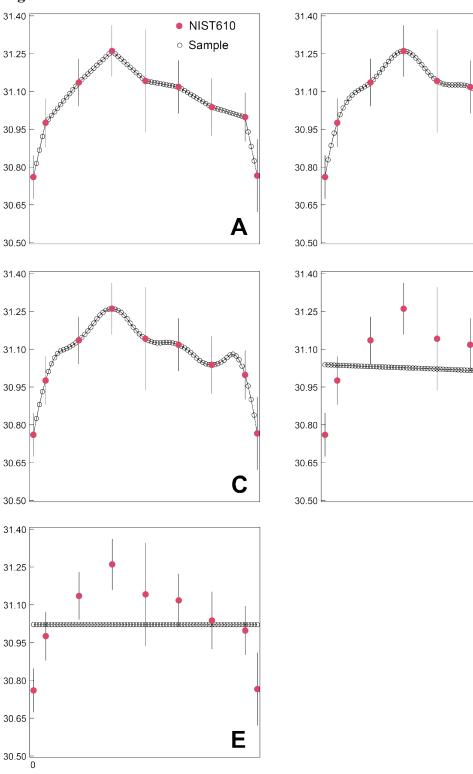


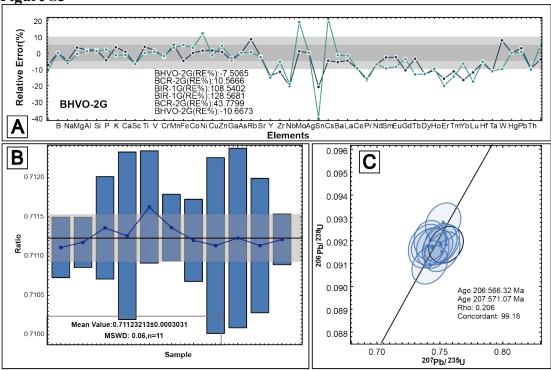
Figure S2



В

D





D	Sample Name	Li	Be	В	Na	Mg	Al	
JUN23A01	NIST610	476.3	460.4	349.4	100026	492.8	10722	32
JUN23A02	BHVO-2G	4.07	0.0	4.392	16932	44419	73293	23
JUN23A03	BCR-2G	9.951	3.961	21.33	23932	22034	73732	25
JUN23A04	BIR-1G	6.256	0.234	3.54	14014	58526	80915	22
JUN23A05	MongOL sh11-2	1.844	0.0	11.59	164.1	298329	267.9	18
JUN23A06	EM57-1-0001_1	3.129	0.0	17.86	92.58	265816	267.3	18
JUN23A07	EM57-1-0001_2	4.153	0.0	10.1	97.98	275352	202.9	18
JUN23A08	EM57-1-0001_3	2.171	0.0	20.58	90.39	278119	254.4	18
JUN23A09	EM57-1-0001_4	1.565	0.0	14.24	89.16	288390	281.9	19
JUN23A10	EM57-1-0001_5	4.46	0.3621	18.7	86.4	255670	135.3	18