SUPPLEMENTARY MATERIALS

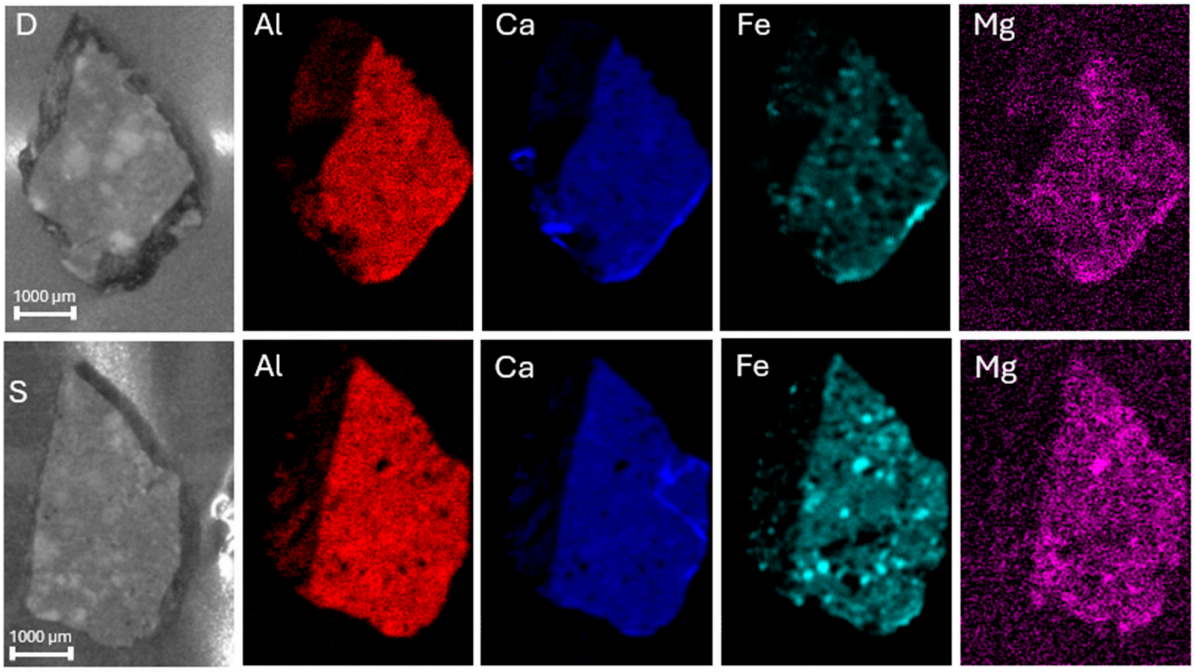


Figure S1 XRF maps of D- and S-face of NWA 11421

MINERAL	RELAB ID
Albite	nnepa5
Andesine	bir1sr060a
Anorthite	bir1pl121a
Bytownite	bir1pl154h
Enstatite	bir1dd167
Fayalite	bir1dd098p
Ferrosilite	bir1dl061a
Forsterite	bmr1dh010
Labradorite	bir1sr041
Oligoclase	bir1sr053a
Pigeonite	bir1pp100a
Plagioclase (Apollo 17)	bir1lr166

Table S1 RELAB index of the spectra used in the paper

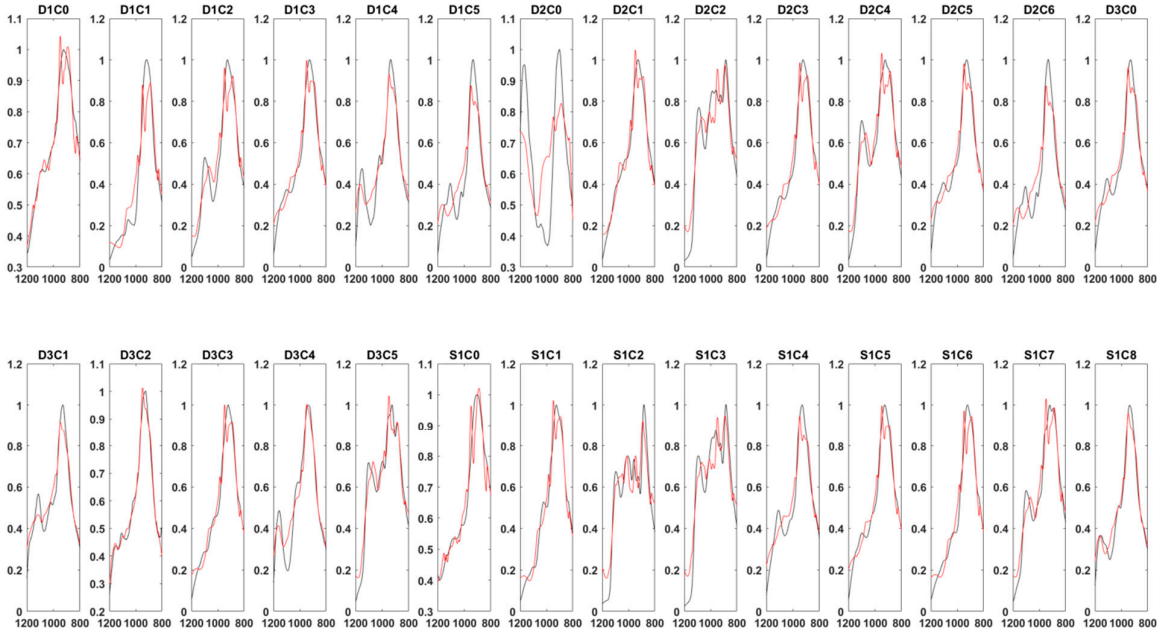


Figure S2 Result of nonnegative least-squares (NLS) curve fitting for the cluster obtained from FPA μ-FTIR measurements

targets	albite	andesine	anorthite	bytownite	enstatite	fayalite	ferrosilite	forsterite	labradorite	oligoclase	pigeonite
D1C0	0.004	0	0.211	0.047	0.216	0.408	0.132	0.173	0	0	0.151
D1C1	0	0	0.006	0	0	0.588	0	0.435	0	0	0
D1C2	0	0	0	0	0	0.491	0	0.383	0	0	0.296
D1C3	0	0	0.266	0	0	0.364	0	0.379	0	0	0.118
D1C4	0	0	0.563	0	0	0.155	0	0.259	0	0	0
D1C5	0	0	0.391	0	0	0.209	0	0.318	0	0	0.023
D2C0	0.521	0	0.269	0.106	0.037	0.167	0	0	0	0	0
D2C1	0	0	0.072	0	0	0.380	0	0.553	0	0	0.194
D2C2	0	0	0	0	0	0.380	0.314	0.297	0	0	0.351
D2C3	0	0	0.173	0	0	0.467	0	0.395	0	0	0.101
D2C4	0	0	0	0	0	0.397	0	0.368	0	0	0.511
D2C5	0	0	0.346	0	0	0.285	0	0.342	0	0	0.121
D2C6	0	0	0.367	0	0	0.204	0	0.345	0	0	0.021
D3C0	0	0	0.326	0	0	0.270	0	0.346	0	0	0.132
D3C1	0	0	0.215	0.346	0	0.097	0	0.213	0	0	0.125
D3C2	0	0	0.515	0.037	0.015	0.157	0.017	0.240	0	0	0.132
D3C3	0	0	0.163	0	0	0.441	0	0.465	0	0	0.067
D3C4	0	0	0.607	0	0	0.044	0	0.372	0	0	0
D3C5	0	0	0	0	0	0.282	0.086	0.450	0	0	0.485

S1C0	0.038	0	0.115	0.062	0.261	0.557	0.111	0.102	0	0	0.042
S1C1	0	0	0.092	0.032	0	0.460	0.018	0.552	0	0	0
S1C2	0	0	0	0	0	0.444	0.494	0.066	0	0	0.221
S1C3	0	0	0	0	0	0.362	0.297	0.288	0	0	0.370
S1C4	0	0	0.310	0	0	0.275	0	0.301	0	0	0.189
S1C5	0	0	0.231	0	0	0.391	0	0.386	0	0	0.126
S1C6	0	0	0.108	0	0	0.549	0	0.434	0	0	0.033
S1C7	0	0	0	0	0	0.513	0	0.378	0	0	0.375
S1C8	0	0	0.514	0	0	0.128	0	0.359	0	0	0

Table S2 Result of nonnegative least-squares (NLS) curve fitting for the cluster obtained from FPA μ-FTIR measurements

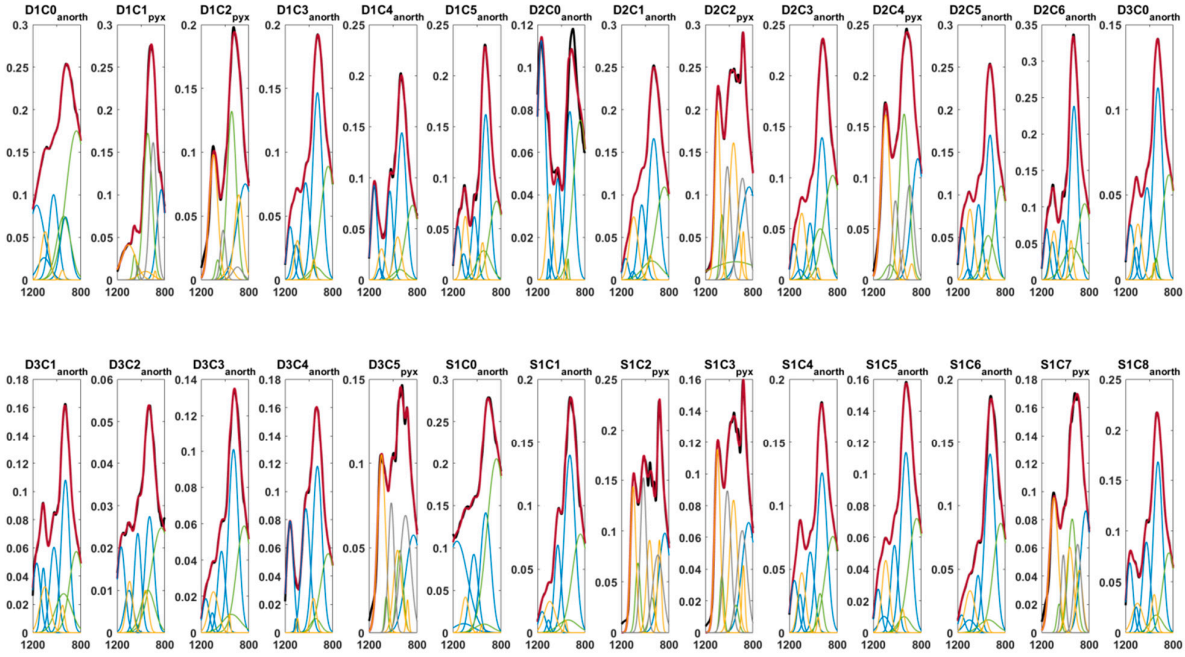


Figure S3 Result of gaussian fit for the cluster obtained from FPA μ-FTIR measurements

targets	% anorthite	% olivine	% pigeonite	% ferrosilite
"D1C0"	40	54	6	0
"D1C1"	0	57	17	26
"D1C2"	0	58	35	7
"D1C3"	60	34	6	0
"D1C4"	60	27	13	0
"D1C5"	53	34	13	0
"D2C0"	60	32	8	0
"D2C1"	46	40	14	0
"D2C2"	0	41	33	26
"D2C3"	40	49	11	0
"D2C4"	0	52	27	21
"D2C5"	48	38	13	0
"D2C6"	53	36	11	0
"D3C0"	61	30	9	0
"D3C1"	55	33	11	0
"D3C2"	46	45	10	0
"D3C3"	54	38	8	0
"D3C4"	68	27	5	0

"D3C5"	0	34	34	32
"S1C0"	52	44	3	0
"S1C1"	55	38	8	0
"S1C2"	0	33	33	34
"S1C3"	0	30	37	33
"S1C4"	57	34	10	0
"S1C5"	52	36	12	0
"S1C6"	52	38	10	0
"S1C7"	0	43	40	18
"S1C8"	62	27	11	0

Table S3 Result of gaussian fit for the cluster obtained from FPA μ-FTIR measurements