

Table 2 (continued)

Anal. No.	Fragment	SiO ₂	TiO ₂	Al ₂ O ₃	CaO	MgO	FeO	Total
Clear devitrified spherule								
23	301,21	43.26	0.20	28.53	18.91	3.02	3.32	97.25
Dark, heterogeneous, flow-banded glasses								
16	301,15	43.50	3.54	15.23	11.91	9.13	16.87	100.19
17	301,15	44.11	3.76	15.16	11.80	8.91	15.27	99.02
18	301,15	43.96	3.62	15.94	11.96	8.52	14.63	98.62
34	301,33	43.78	4.25	15.14	11.98	8.86	15.32	99.34
36	301,33	43.87	3.52	16.06	12.40	8.84	15.06	99.76
37	301,33	44.85	3.40	16.09	12.41	8.89	15.02	100.66
41	301,40	42.71	3.17	13.82	11.48	10.20	20.83	102.20
45	301,51	41.65	3.22	16.65	12.34	9.16	16.00	99.02
46	301,51	43.36	3.02	16.57	12.52	9.19	15.14	99.81
Dark brown glass in plagioclase-rich fragment								
52	301,73	46.36	0.46	7.89	8.62	19.19	18.76	101.29
53	301,73	41.60	0.51	6.62	4.91	26.58	21.47	101.70
54	301,73	41.89	0.28	3.06	2.98	34.31	21.64	104.15
55	301,73	47.03	0.69	9.58	13.91	8.81	19.88	99.91
LIGHT MICROBRECCIAS (area scan analyses)								
15	301,6	39.87	1.73	16.57	11.11	7.68	12.56	89.51
24	301,21	45.96	0.57	23.65	14.00	7.53	7.89	99.59
31	301,26	47.00	1.34	22.03	14.49	5.50	9.11	99.48
40	301,37	43.84	1.18	18.20	13.08	6.54	8.75	91.60
48	301,72	41.31	1.38	17.65	11.04	7.73	11.54	90.66

increasing shock pressures, these include: (1) deformation twin lamellae, probably parallel to (001) (25) (Figures 14-16); (2) multiple sets of finer parallel lamellae, apparently produced at higher shock pressures (3, 26) (Figure 17); (3) extreme mosaicism (Figures 16, 18); (4) possible partial isotropization (Figures 19, 20); (5) possible selective melting (Figure 21).

Only a few shock-deformed fragments of plagioclase were observed. Multiple planar features (shock lamellae) were observed in one fragment (311,25). Completely isotropic plagioclase (maskelynite) was identified in another (Figure 22). The occurrence of colorless glasses with a plagioclase-rich composition (e.g., see Figure 33) implies the existence of shock-melted plagioclase in the Luna-16 material as well (e.g., 2).

Neither shock-produced deformation twins in ilmenite (27) or deformation structures in olivine (25) were observed in the Luna-16 material examined. The presence of shock effects in both pyroxene and plagioclase implies that analogous shock effects are present in other minerals and should be observed with more extensive study.

Only three shocked basaltic rock fragments were observed (Figures 23, 24). In two specimens (Figures 23, 24) fractured pyroxene is associated with isotropic,

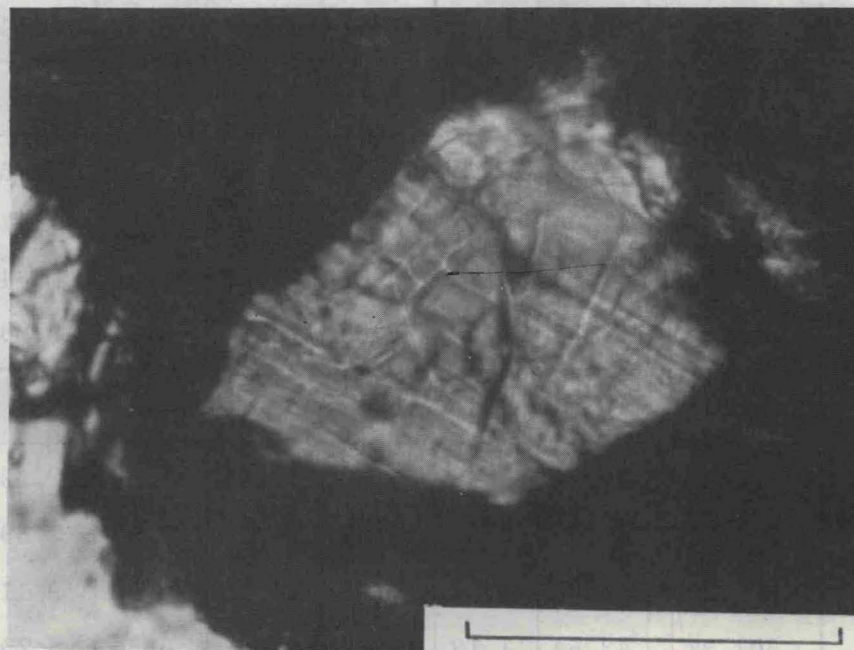


Figure 14. Apparent deformation twin lamellae in a weakly shocked pyroxene crystal in dark microbreccia (alternating light and dark lines running WNW to ESE across the crystal). Fragment 301,68; plane polarized light; scale bar 0.1 mm.