

Supplementary Materials for

Return of the Ritonavir: A Study on the Stability of Pharmaceuticals Processed in Orbit and Returned to Earth

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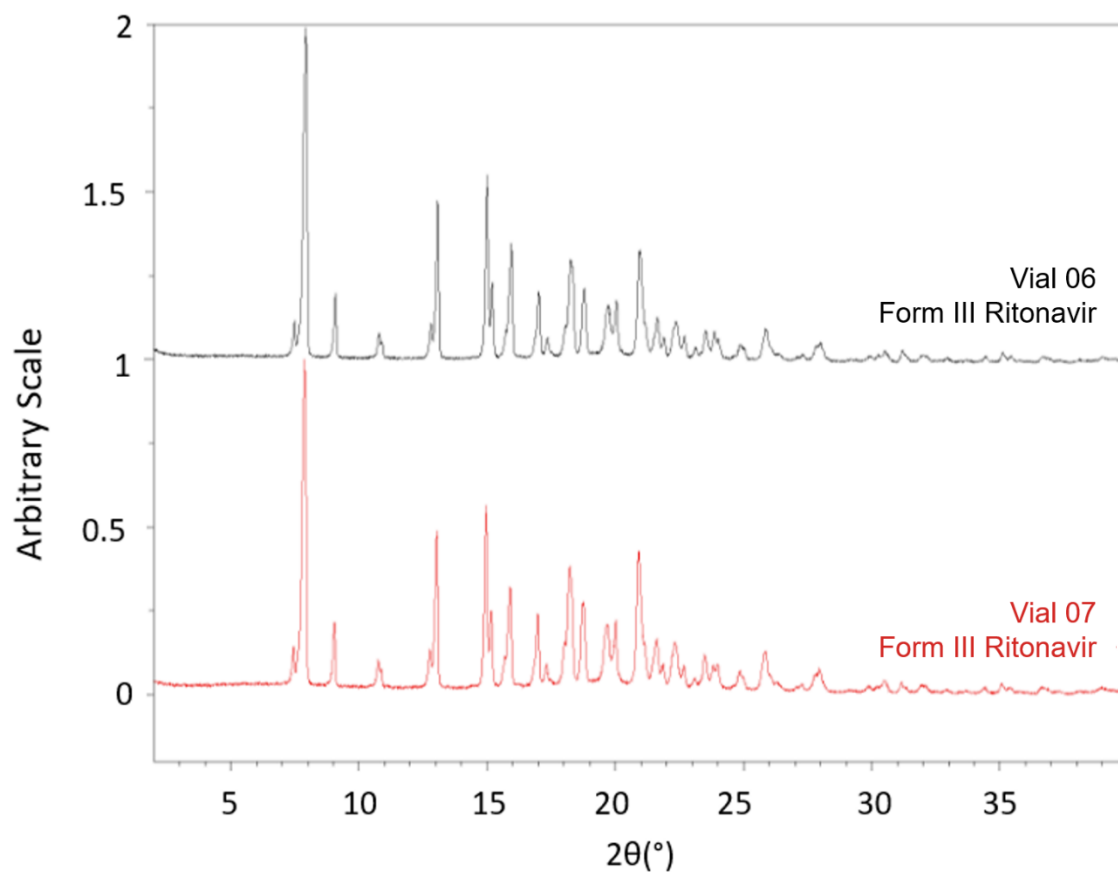


Fig S1. Resulting Crystallinity from Terrestrial Crystallization Test. XRPD diffractograms of ritonavir crystallized in the crystallization hardware terrestrially under vacuum. Both sample patterns match that of Form III.

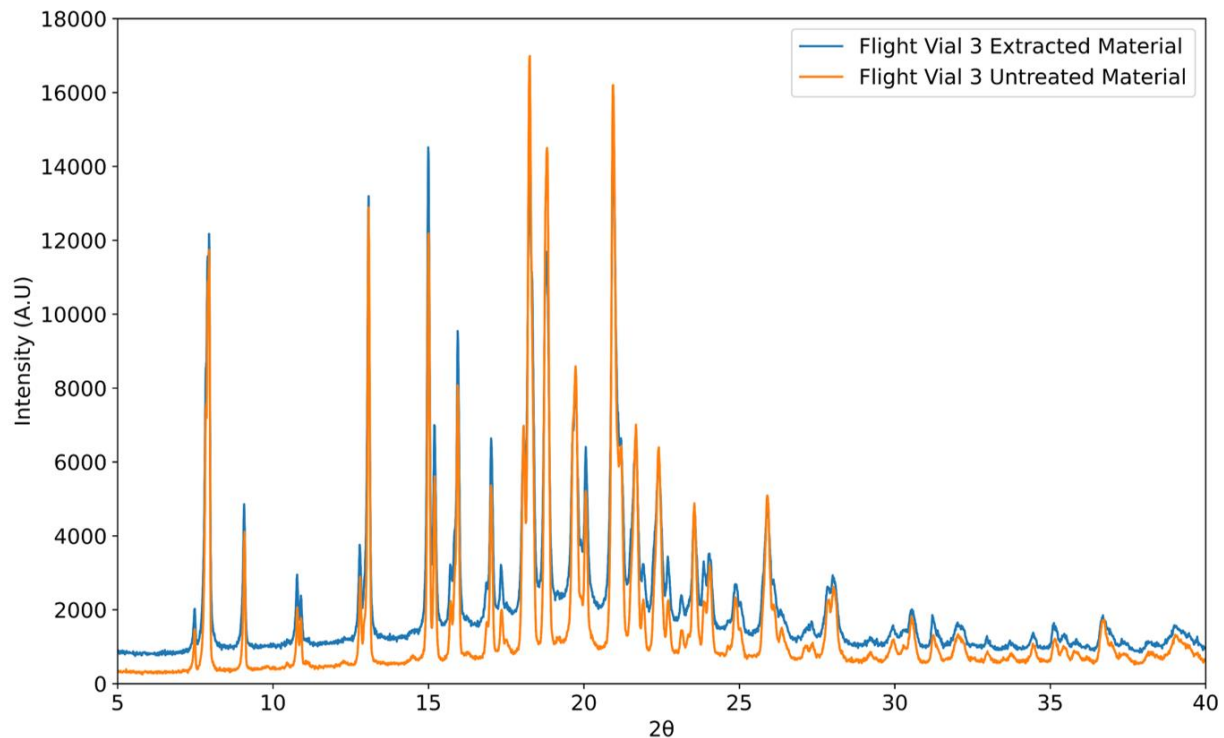


Fig S2. XRPD of untreated material vs. extracted and lightly ground material. The diffraction pattern of the extracted material from Flight Vial 3 contains some amorphous background that can be attributed to the process of removing the materials from the vials and lightly grinding for XRPD measurement. The untreated material was removed in a large piece from the Teflon ball seal and was therefore not subjected to the same removal force as the bulk of the material from Flight Vial 3. The untreated material does not have the same amorphous background indicating the extraction is the likely cause of the amorphous background instead of the forces during reentry.

Table S1. Thermal recipe compared to as-measured terrestrial and in-orbit performance.

		Recipe	Terrestrial	Microgravity
Melt Phase	Melt Ramp Rate	Any	11.2 °C/min	9.6 °C/min
	Melting Temperature	131 °C +/-3 °C	130 °C +/-1 °C	131°C +/-2 °C
	Melt Duration	> 20 min	38.4 min	36 min
	Melt Quench Rate	≤-20 °C/min	-29 °C/min	-50.9 °C/min
	Melt Quench Min Temp	75 °C	77.7 °C	77.3 °C
Growth Phase	Growth Temperature	80 °C +/-3 °C	80 °C +/-0.5 °C	80 °C +/-4.2 °C
	Growth Duration	24 hours +/- 1hour	23.6 hours	23.83 hours
	Growth Quench Rate	Any	-4.5 °C/min	-3.8 °C/min