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**Introduction:** Despite all of the new data generated on endogenous lunar volatiles since the publication of New Views of the Moon, many important questions remain unanswered or only partially resolved. This abstract looks to the future and discusses several of those important remaining questions on the topic of endogenous lunar volatiles.

**Volatile-bearing minerals on the Moon:** Many of the volatile-bearing minerals (exclusive of apatite) that have been reported in lunar rocks remain "unverified" (e.g., amphibole) and a recent effort to reexamine some of these samples with modern techniques could yield additional important mineral systems through which one can utilize in order to understand lunar volatiles. A substantial effort has been put forth to investigate apatite, but that wealth would be greatly enhanced by information about volatile abundances and isotopic compositions of coexisting amphiboles or biotite, which could potentially move the field forward much further than with apatite alone. Samples from evolved crustal terranes that have been identified by orbital data (e.g., Compton-Belkovich) would be ideal places to look for additional volatile-bearing mineral phases in lunar samples.

**The abundance and distribution of magmatic volatiles in the mantle, crust, and bulk silicate Moon:** Estimates of the abundances of $H_2O$, F, and Cl in the lunar mantle, crust, and bulk Moon vary substantially depending on the samples used [1], which either indicates a highly heterogeneous distribution of volatiles in the lunar interior, or it represents an incomplete understanding of the origin and petrogenesis of the various lunar rock types. Consequently, these observations highlight the importance of using a diverse set of samples to try and estimate the volatile abundances of the lunar mantle, but it also highlights the importance of investigating the petrogenetic history of each sample beyond the information obtained directly for the magmatic volatiles. We advocate continued research on volatiles in lunar samples for which little work has been reported, including high-Ti basalts, high-Al basalts, and Luna samples. Additionally, any samples collected outside the PKT will be very important for determining whether there are differences in the volatile abundances between rocks within and outside the PKT.

**Development of accurate lunar hygrometers:** The estimates of the volatile abundances of urKREEP, the lunar mantle, and bulk silicate Moon (BSM) could be further refined with future experimental efforts that constrain the mineralogy and mineral composition of the entire LMO using appropriate BSM starting compositions as well as experimental work on mineral-melt partitioning of $H_2O$, F, and Cl between LMO minerals (olivine, pyroxene, Fe-Ti oxides, and anorthitic plagioclase) and silicate melt under reducing conditions relevant to lunar magmatism.

**Origin of δD variations in lunar rocks and minerals:** It is still unclear whether or not the isotopic variations in H observed in lunar samples are being driven by fractionation processes, mixing of various reservoirs, or both. H isotopes were likely affected by secondary processes and mixing of multiple reservoirs, which preclude straightforward interpretations of the existing data. From the plethora of data on lunar soils, it is clear that there is a very light (~ -1000 ‰) reservoir of solar wind and a fairly heavy reservoir of spallogenic D at the lunar surface, and nearly all data lay between these two extremes and may represent primary lunar H, H that was delivered late, or mixtures of the two extremes [1].

**References:** [1] McCubbin et al (2015) *Am. Min.* 100, 1668-1707.