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CHONDRULES FROM THE EARTH AND MOON: A REVIEW.
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Since chondrules are arguably the most important constituent of chondritic meteorites, deciphering their origin would constitute a major step toward understanding early solar system processes. We here draw attention to proposed chondrules found in lunar and terrestrial samples since their existence on these parent bodies would seriously constrain theories for the origin of meteoritic chondrules.

Terrestrial Chondrules: Graup has reported lithic chondrules in the crater suevite and both fluid-drop and lithic chondrules in the fall-out suevite of the Ries Crater [1,2]. He observed 115 fluid-drop and 44 lithic chondrules (as well as 10 glass spherules). Fourteen were shown in figures. He argued that textures and sizes, and thus modes of formation, are very similar to those of meteoritic chondrules. The Ries chondrules often have fine-grained rims similar to those found on meteoritic chondrules, and similar origins have been proposed for both kinds of rim [1,3,4]. There is little available data beyond Graup's initial descriptions, and these objects require further study.

Lunar Chondrules: Chondrules have been found in Apollo 11, 14, 15, 16, and Luna 16 soils and breccias [5–11]. Both fluid-drop and lithic chondrules have been reported, many with fine-grained rims. Again, because of the similarity in texture, similar formation details to those of meteoritic chondrules have been proposed for both the chondrules and their rims. Most lunar chondrules have ANT compositions, as opposed to basaltic compositions, either because nucleation of these compositions is favored or because of the more intense impact history of the lunar highlands [e.g., 11]. Lunar agglutinates, which constitute 50 vol% of some soil samples, have histories involving reduction and evaporation similar to those of group A meteoritic chondrules [12]. They differ from the chondrules mainly in size, shape, the presence of unmelted dust particles, and abundant vesicles [12].

At the moment there appear to be only two significant differences between lunar, terrestrial, and meteoritic chondrules, their compositions, and their place of origin. Further study, especially of the terrestrial chondrules, is required to confirm this. In many respects (size, texture, the presence of rims, and the existence of both droplet and lithic forms), they resemble each other and are distinguishable from simple melt spherules, which are relatively common on the Moon. The occurrence of true chondrules on three planetary bodies, especially when associated with impact, and differing only in their compositions, would suggest that the meteoritic chondrules are impact in origin. The differences in chondrule abundance on the meteorite bodies and other planetary objects could reflect differences in parent body size, impact mechanics, surface processes, and selection effects surrounding the transfer of meteorites to Earth and their passage through the atmosphere.

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