

**THE ROLES OF BENEFICIATION IN LUNAR WORK.** D. L. Rickman, NASA Marshall Space Flight Center (320 Sparkman Drive VP61, Huntsville AL 35805, Doug.Rickman@nasa.gov).

Natural feedstocks used for any process are intrinsically variable. They may also contain deleterious components or low concentrations of desired fractions. For these three reasons it is standard industrial practice to beneficiate feedstocks. This is true across all industries which transform raw materials into standardized units. On the Moon there are three natural resources: vacuum, radiation and regolith. To utilize *in situ* resources on the Moon it is reasonable to presume some beneficiation of the regolith (ground rock) resource will be desirable if not essential. As on Earth, this will require fundamental understanding of the physics and chemistry of the relevant processes, which are exceedingly complex in detail. Further, simulants are essential test articles for evaluation of components and systems planned for lunar deployment. Simulants are of course made from geologic feedstocks. Therefore, there is variation, deleterious components and incorrect concentrations of desired fractions in the feedstocks used for simulants. Thus, simulant production can benefit from beneficiation of the input feedstocks. Beneficiation of geologic feedstocks is the subject of extractive metallurgy. Clearly, NASA has two discrete interests pertaining to the science and technology of extractive metallurgy.