The NASA OSIRIS-REx Sample Catalog: Returned From Investigator Samples

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The Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) has recently concluded the sample analysis phase of its mission. As part of the mission close-out, almost all mission samples were returned to NASA curation; only a very limited set of samples were given slightly extended loans. The NASA OSIRIS-REx curation team has worked consistently and diligently over the last calendar year to complete processing of the samples returned by the mission sample analysis team (SAT). In the NASA OSIRIS-REx public catalog, these samples from the mission sample analysis team are flagged 'Y' or 'Yes" for the 'Sample Returned from Investigator' field [1]. These samples are equally available for request by members of the broader scientific community as well as former mission SAT members. As with all OSIRIS-REx samples, the returned from investigator samples must be announced in the NASA public catalog eight weeks prior to becoming available for request [2]. If a scientific study could use a 'Sample Returned by Investigator' rather than require currently pristine Bennu samples be made non-pristine, the community is strongly encouraged to consider these returned samples.

Overview of Current Returned from Investigator Samples

The currently available suite of returned from investigator include a broad variety of small mass samples; there are currently no unaltered Bennu samples > 0.050 g that have been returned at the time of this abstract submission. Samples that are listed as non-pristine in the NASA public catalog have frequently been made non-pristine to support an approved sample allocation but have not necessarily been returned to curation and/or have not yet been reported as consumed, destroyed, or entirely subdivided. The 'Samples Returned by Investigator' include a wide range of small samples and splits, including numerous aggregates/particles/chips mounted on SEM stubs, small mass aggregate and chip samples, a variety of residue samples, FIB sections, atom probe tips, as well as a limited number of polished thick sections (some mounted to glass slides and some made with only epoxy). Examples of a selection of returned from investigator samples are included in Figures 1-3. This presentation will include additional examples of returned from investigator samples announced in the most recent NASA OSIRIS-REx catalog update to the Symposium.

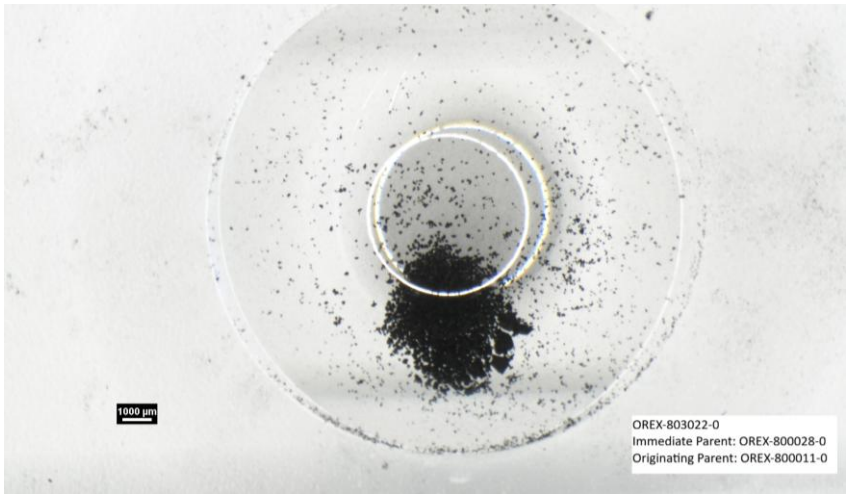

Figure 1: Non-pristine Bennu sample OREX-803022-0. This aggregate sample was announced in the catalog with the 8,1 Astromaterials Newsletter release after being returned to the collection. This is an example of one of many returned from investigator samples that are available for anyone in the community to request.

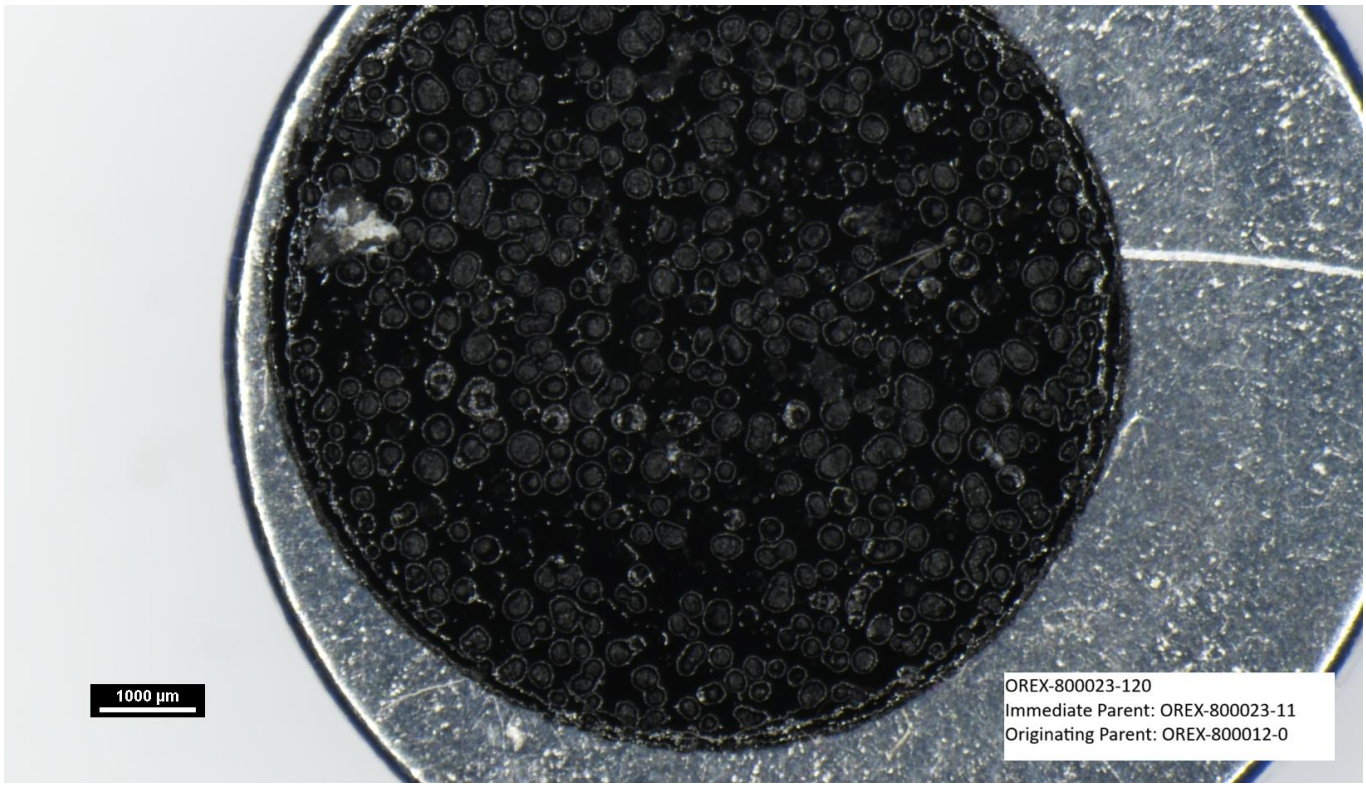

Figure 2: Non-pristine Bennu sample split OREX-800023-120. This chip of mottled particle OREX-800023 (monolithic-dark veined by [3] classification scheme) on carbon tape on an SEM stub was announced in the catalog with the 8,1 Astromaterials Newsletter release after being returned to the collection. This is an example of one of many returned from investigator samples that are available for anyone in the community to request.



Figure 3: Non-pristine Bennu sample split OREX-800055-7. This chip of angular particle OREX-800055 (monolithic-bright domains by [3] classification scheme) announced in the catalog with the 8,1 Astromaterials Newsletter release after being returned to the collection. This is an example of one of many returned from investigator samples that are available for anyone in the community to request.

References [1] NASA OSIRIS-REx Public Catalog https://curator.jsc.nasa.gov/osirisrex/sample_search.cfm [2] NASA Astromaterials Allocation Review Board Charter https://curator.jsc.nasa.gov/bboard.cfm [3] Eckley et al. (in press) *Meteoritics and Planetary Science*