Goldschmidt 2026 Abstract
https://doi.org/10.46427/gold2026.33234

The NASA OSIRIS-REx Sample Catalog: Three Years After Earth Return

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The Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer (OSIRIS-REx) Sample Return Capsule (SRC) landed on Earth on September 24, 2023, was partially disassembled to enable connection of a nitrogen purge and then had the science canister transferred to NASA Johnson Space Center for further disassembly followed by initial sample characterization [1]. The initial NASA OSIRIS-REx catalog was released in March 2024 and at the time of this abstract submission has been updated three times. There are nineteen named particles with original weights ≥ 0.500 grams with a combined original weight of 23.551 grams, which constitutes a little over 19 % of the total bulk sample weight. In parallel with processing for sample requests, when a bulk sample tray is unsealed in the pristine nitrogen glovebox, the NASA OSIRIS-REx curation team has been endeavoring to name and containerize the largest particles in the collection; therefore, most of the particles with original weights ≥ 0.5 grams have been individually named. Otherwise, the majority of the naming, processing, and containerization of individual particles for the NASA catalog has been driven by sample requests.

There are twenty-two named particles with original weights between 0.300-0.499 grams with a combined original weight of 8.037 grams, which constitutes a little over 6.6 % of the total bulk sample mass, as of abstract submission. There are currently forty-six named particles with original weights between 0.100-0.299 grams with a combined original weight of 7.766 grams, which constitutes a little over 6.3 % of the total bulk sample mass. There are currently twenty-four named particles with original weights between 0.050-0.099 grams with a combined original weight of 1.719 grams, which constitutes a little over 1.4 % of the total bulk sample mass. There are anticipated to be numerous more particles in the aggregate samples of the OSIRIS-REx collection with weights between 0.050-0.299 grams so the number of these particles and their combined weights are expected to increase as more particles are individually named, processed, and containerized.

Reference: [1] Lauretta D.S. et al. 2024. *MAPS* 59 (9): 2453-2486