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University of Arizona

**TITLE: Exploring Asteroids with the OSIRIS-REx Spacecraft and Samples**

**ABSTRACT:** NASA's OSIRIS-REx mission became the first U.S. spacecraft to collect and return a sample from an asteroid, delivering over 120 g of material from (101955) Bennu to Earth in 2023. Early analyses reveal that Bennu's rocks are rich in carbon, nitrogen, and water-bearing minerals, as well as unexpected magnesium-sodium phosphates—evidence that its parent body once hosted liquid water and complex chemistry. These findings illuminate the processes that shaped the early solar system and supplied the ingredients for life to Earth. Building on this success, the spacecraft has begun a new journey as OSIRIS-APEX to study asteroid (99942) Apophis when it passes extraordinarily close to Earth in 2029. Lessons from Bennu will guide this next encounter, offering a rare opportunity to watch an asteroid's surface respond to strong tidal forces—and to deepen our understanding of how planetary bodies evolve and interact across the solar system.