



भौतिक अनुसंधान प्रयोगशाला, अहमदाबाद

Physical Research Laboratory, Ahmedabad

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**PRL Ka Amrut Vyakhyaan-01**

**on**

**Wednesday, 04 August 2021 @**

**16:00 hrs. IST**



**“OSIRIS-REX: SAMPLE  
SCIENCE AND THE  
GEOLOGIC CONTEXT FOR  
THE RETURN REGOLITH  
FROM ACTIVE ASTEROID  
BENNU ”**

**Prof. Harold C. Connolly Jr.**

Founding Chair and Professor,  
Department of Geology,  
Rowan University, NJ, USA



**PRL YouTube Link: <https://youtu.be/Xt141FeOYGY>**

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## **PRL ka Amrut Vyakhyaan 01**

**Title: “OSIRIS-REx: Sample science and the geologic context for the return regolith from active asteroid Bennu”**

**Speaker: Prof. Harold C. Connolly Jr.**

Founding Chair and Professor, Dept. of Geology, Rowan University, NJ, USA

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### **Abstract**

The OSIRIS-REx space mission is part of NASA's New Frontiers program and has a main goal of returning at least 60 g of pristine regolith from asteroid Bennu. On May 10th of this year, the spacecraft successfully performed a departure maneuver and left the vicinity of the Target asteroid, having achieved all of its science and engineering goals flawlessly, including the collection of regolith from asteroid Bennu. This talk will review the mission, the major findings of the mission as they pertain to sample science, discussion on how our finding may illuminate the origins and evolution of the collected regolith. It will review the OSIRIS-REx collection and stowing (or the sample) process, what we know about the collected sample, and review some basic aspects of how the team will analyze and curate the sample when it returns.

### **The Speaker**

Dr. Harold C. Connolly Jr. is Founding Chair and Professor at the Department of Geology at Rowan University. He is a Co-Investigator and Mission Sample Scientist on NASA's asteroid sample return mission, OSIRIS-Rex. He is also a Co-Investigator on JAXA's asteroid sample return mission, Hayabusa2, and is a member of the sample analysis team. Dr. Connolly's research focuses on investigating the origin and evolution of chondrites, 4.567 billion-year-old rocks and the planetary materials from which the Earth was made. He is a petrologist classically trained in geology, but his research bridges geology, cosmochemistry, astrophysics, and dynamical modeling. Dr. Connolly is a recipient of NASA Group Achievement Award, OSIRIS-REx in 2017, and Antarctic Service Medal in 1999. He also has an Asteroid in his name Asteroid (6761) Harold Connolly. Together with his student, Dr. Connolly has co-discovered a mineral named Krofite in 2011. Dr. Connolly has authored several research publications and is on the Editorial Board of Earth, Planets, and Space and has been a guest editor on several journals.

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## About PRL

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The Physical Research Laboratory (PRL), known as the “cradle of space science” in India, is one of the premier research institutes founded in 1947 by Prof. Vikram Sarabhai, a renowned Cosmic Ray Scientist, a great visionary and institution builder. PRL played a seminal role in producing a highly motivated cadre of space scientists and the technologists of highest international repute. The first scientific rocket launched from Thumba on 21st November-1963 and many other rockets launched thereafter contained payloads developed at PRL. Dr. Sarabhai initiated many of these scientific and technical activities at PRL which eventually led to the formation of the Indian Space Research Organization (ISRO).

Therefore, PRL is known as the “cradle of space science” in India. Further, the research in the area of Plasma Physics expanded to the formation of the Institute of Plasma Research (IPR).

As an institution PRL is unique in that it conducts fundamental research in a wide range of research areas from the Earth to the cosmos, and comprising Astronomy and Astrophysics; Solar Physics; Space and Atmospheric Sciences; Theoretical Physics; Geosciences; Atomic, Molecular and Optical Physics, Astrochemistry; and Planetary Sciences and Space Exploration. PRL is one of the rare research institutes of international repute wherein research in such diverse fields of sciences is carried out using several state-of-the-art experimental facilities that exist under one umbrella.

Along with the ongoing research, several new initiatives have been taken up during the last few years. The Multi-Application Solar Telescope (MAST) at Udaipur Solar Observatory has been operationalized. PRL initiated scientific programmes in frontier areas of research, which include a search for exo-planets, laboratory studies of interstellar grains, laboratory synthesis of cold astro-molecules and experimental studies in the field of quantum optics. PRL is also developing several scientific payloads as a part of ISRO’s larger vision and contributing to roadmap for competitive scientific exploration of the solar system and beyond. In particular, PRL has been contributing significantly not only in building instruments for space missions, such as Chandrayaan-1, Chandrayaan-2, AstroSat and upcoming Aditya-L1, Chandrayaan-3 and planetary and space missions, but also by bringing out new and insightful science results.

PRL contributes to several national and international research programmes and to human resource development through its Doctoral and Post-Doctoral Programmes, capacity building programmes, such as UN Course on Space Science, and science and engineering internship programmes. PRL contributes significantly to society through its Outreach Programmes by periodically organizing science exhibitions and Open Houses, planned visits of students of various school and college to PRL, and popular talks at various institutions to not only share the excitements of the advancements of contemporary scientific findings but also to encourage students to take up sciences as their research career.