

# Enhancing co-operation in outer space research

**C**handrayaan-2 has shot an image of the Moon from a height of over 2,000 kilometres as it flies around the satellite, preparing to land a rover on the lunar surface. The photo of the Moon was shot by Vikram, which is Chandrayaan-2's lander.

The photo was released by Indian Space Research Organisation (ISRO) on Twitter. The image was shot on August 21 and was taken from a height of 2,650 kilometres, ISRO said.

The Chandrayaan-2 mission's D-Day is September 2, when the lander Vikram will separate from the spacecraft and get into a lunar orbit of its own.

Chandrayaan 2 is on a mission unlike any before. Leveraging nearly a decade of scientific research and engineering development, India's second lunar expedition will shed light on a completely unexplored section of the Moon — its South Polar region. This mission will help us gain a better understanding of the origin and evolution of the Moon by conducting detailed topographical studies, comprehensive mineralogical analyses, and a host of other experiments on the lunar surface. While there, we will also explore discoveries made by Chandrayaan 1, such as the presence of water molecules on the Moon and new rock types with unique chemical composition.

Chandrayaan-2 has several science payloads to expand the lunar scientific knowledge



Modi watching the launch



Bahrain-India sign MoU for cooperation in space

through detailed study of topography, seismography, mineral identification and distribution, surface chemical composition, thermo-physical characteristics of top soil and composition of the tenuous lunar atmosphere, leading to a new understanding of the origin and evolution of the Moon.

The Orbiter payloads will conduct remote-sensing observations from a 100 km orbit while the Lander and Rover payloads will perform in-situ measurements near the landing site.

Referring to the launch of Chandrayaan 2, Indian Prime Minister Narendra Modi said in a series of tweets: "Special moments that will be etched in the annals of our glorious history! The launch of Chandrayaan 2 illustrates the prowess of our

scientists and the determination of 130 crore Indians to scale new frontiers of science. Every Indian is immensely proud today!

Indian at heart, Indian in spirit! What would make every Indian overjoyed is the fact that Chandrayaan 2 is a fully indigenous mission. It will have an Orbiter

for remote sensing the Moon and also a Lander-Rover module for analysis of lunar surface."

In March, Bahrain National Space Science Agency (NSSA) and the Indian Space Research Organisation (ISRO) exchanged a memorandum of understanding (MoU) to enhance cooperation

in outer space research and its uses for development purposes.

"The purpose of this MoU is to support the efforts of NSSA in the field of space and its technical applications, through the exchange of experiences and knowledge with ISRO to contribute to building national capacities in this field, in addition to supporting scientific research efforts and the implementation of joint projects," The Minister of Transportation and Communications Kamal bin Ahmed Mohammed, said.

He noted that the memo meets one of the most important articles and visions of the decree of the formation of the NSSA which is to encourage the accession of Bahrain to international treaties and conventions related to space science and the technical con-

cepts relating to it, establishing regional and international cooperation and joint ventures with space agencies, technical, industrial and research institutions active in space science, where the ISRO is one of the leading space organisations.

"This MoU on Cooperation in the Exploration and Uses of Outer Space for Peaceful Purposes between India and Bahrain provides scope for cooperation in various areas of space technology viz. Remote Sensing, Space Science & Planetary exploration, application of space technology etc. A Joint Working Group would be set up for implementation of MoU soon which would implement arrangement on specific areas of cooperation," Indian Ambassador to the Kingdom

Alok K Sinha said.



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Shri. Narendra Modi Prime Minister of India

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