JAWAHARLAL NEHRU PLANETARIUM

Bangalore Association for Science Education

Special Lectures in collaboration with
British Council

by

Prof. Monica Grady

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Topic:

Landing on the comet

and

Prof. Ian Wright

Professor of Planetary Sciences at the Open University
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Topic:

What is the chemical composition of a comet? And how would you measure it?

Date & Time:
February 14, 2018
Wednesday
5:30 pm – 7 pm

Venue:
Jawaharlal Nehru Planetarium
Sri T Chowdaiah Road, High Grounds
Bengaluru – 560 001

Abstract:

- Landing on a Comet

The Rosetta mission was a flagship mission of the European Space Agency. It was launched in 2004 to catch up and rendezvous with comet Comet 67P/Churyumov-Gerasimenko between January and August 2014. In November 2014, the Philae lander dropped slowly onto the surface of Comet 67P. This event was a landmark in Solar System exploration – the first time that a spacecraft had landed on the surface of a comet. One of the instruments on-board Philae was Ptolemy, an instrument designed and built at the Open University to measure the composition of gases released from the comets' surface. Monica Grady was a scientific advisor to the Ptolemy instrument team. She will share her experiences of what it was like to be part of the Rosetta mission, considering why comets are such important objects to explore, and summarising the most significant results from the Rosetta mission.

- **What is the chemical composition of a comet?**
  And how would you measure it?

On the face of it these are two relatively straightforward questions. However, they are, in fact, quite challenging and with answers that are not completely obvious. If we take a step further back, we might ask why we would want to measure such chemical compositions in the first place. Now, this is the kind of question that people interested in planetary science ask all of the time. Comets are the remnants of processes that took place about 4.5 billion years ago when the Solar System formed; they survive, largely unaltered, all the way up to the present day. In other words, studying a comet today is like looking back in time. And so, we can learn something of the materials that were brought together to form planets. We know that one of these, the one we call Earth, ultimately spawned life and it is this phenomenon that has evolved to the point where it is now able to ask the question about how it came to be. Inevitably, study of the starting materials is a pivotal aspect of the quest to understand this.

Returning to our original questions, I will offer two talks that address these. One will be at the level of general interest (intended for the public, youngsters, non-specialists etc.) and the other will be for a more academic audience. I will describe the challenge of having to develop instrumentation that is not only able to survive a rocket launch and a 10-year journey through space, but which would subsequently have to conduct scientific investigations on a body whose properties and features were effectively unknown at the time of launch. And all of this after the perils of a landing manoeuvre, the likes of which had never been attempted previously.

*** ALL ARE WELCOME ***