



The
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Lunar Science as a Window into the Early Evolution of the Solar System and Conditions on the Early Earth

From 10:00 am on Friday 9 November 2012

Geological Society Lecture Theatre, Burlington House, Piccadilly, London

In collaboration with the Geological Society of London, and the UK node of the NASA Lunar Science Institute, on Friday 9 November 2012 the Royal Astronomical Society will hold a Specialist Discussion Meeting in the lecture theatre of the Geological Society on the topic of: Lunar Science as a Window into the Early Evolution of the Solar System and Conditions on the Early Earth.

For the last 4.5 billion years the Earth and Moon have essentially comprised a binary planet system which is unique in the inner Solar System. During this time life has evolved and prospered on Earth, yet key aspects of our planet's early environment are poorly understood owing to active geological and meteorological cycles which have largely erased the geological record from the first thousand million years of Earth history. Fortunately, the binary nature of the Earth-Moon system provides a means of remedying this situation as records of the early environment shared by the Earth-Moon system will be preserved on the ancient surface of the Moon. This Specialist Discussion meeting will explore how the lunar geological record may be used to elucidate early Solar System processes relevant to understanding the earliest history of our own planet and the conditions under which life originated on it. It will also address the extent to which future lunar exploration will be required to gain access to this potentially very rich historical record.



Programme

09:30 Coffee and Registration

Morning Session Chair: Prof. Ian Crawford

10:00 Introduction

10:05 Dr Bill Bottke (Southwest Research Institute): "The Early Bombardment History of the Earth and Moon"

10:30 Dr Katherine Joy (University of Manchester): "The Lunar Regolith as an Archive of Solar System Bombardment"

10:50 Dr Ben Bussey (Applied Physics Laboratory): "The Lunar Poles: A Record of the Early Earth's Impact History"

- 11:10 Prof Jay Melosh (Purdue University): "From Earth to the Moon: Impact Ejection of Intact Rocks from the Surface of our Planet"
- 11:35 Prof Mark Burchell (University of Kent): "Processing of Projectiles During High Speed Impacts: Implications for Understanding what we may find on the Moon"
- 11:50 Prof Bernard Marty (Nancy): "The Lunar Surface Record of Matter Contribution to Planetary Surfaces in the Terrestrial Region"
- 12:15 Prof Euan Nisbet (Royal Holloway, University of London): "What was the Earth's surface like in the late Hadean and early Archaean, and can ejected ancient terrestrial material be recognised on the Moon?"

12:30 Discussion

12:45 LUNCH

Afternoon Session Chair: Prof. Hilary Downes

- 13:30 Prof Tim Elliott (Bristol): "The Importance of the Moon as an Isotopic Reference for Earth Evolution"
- 13:50 Prof Lars Stixrude (UCL): "Fluid Silicates at the Origin of the Earth-Moon System"
- 14:10 Prof Alex Halliday (Oxford): "Delivery of Volatiles to the Earth Before and After Moon Formation"
- 14:30 Dr Mahesh Anand (OU): "The Timing and Source(s) of Water Addition in the Lunar Interior"
- 14:50 Dr Dave Waltham (Royal Holloway, University of London): "Where was the Moon when the Earth was Young?"
- 15:10 Prof Ian Crawford (Birkbeck, University of London): "Accessing the Lunar Record: Implications for Exploration Policy"
- 15:30 TEA (Followed by the RAS Ordinary Meeting at 16:00)

Posters

(To be displayed in the Lower Library of the Geological Society)

- Jessica Barnes (OU): "Water in the Moon: Insights from SIMS analyses of lunar apatites"
- Anton Kearsley (NHM): "What can you tell from a piece of the Moon the size of your fingernail?"
- James Mortimer (OU): "Investigating the Distribution and Source(s) of Lunar Volatiles"
- Graham Oram (U3A): "The Moon as a Planetoid"
- Ross Potter (LPI): "Lunar impact basins: A window into basin formation in the Solar System"
- Max Wallis (Cardiff): "Testing moon-dust for traces of life"