Meteorites and the Solar System

Presented by Dr Mike Simms, National Museums Northern Ireland

Question and Answer Session

1. **Will we receive the recording?**

   The recording will be available at https://www.science03.org/event/meteorites-and-the-solar-system/

2. **What is the make-up of the matrix in which the chondrules are held?** Answered Live.

3. **How big is the biggest meteorite?** Answered Live.

4. **You showed a picture of the meteorite in the grass, surly it would have been hot enough to burn the grass?** Answered Live.

5. **How hot does the air have to be to melt a planet?** Answered Live.

6. **Where we find a meteorite crater, is the meteorite still there or does it disintegrate?** Answered Live.

7. **Why don't we get meteorites from Venus?** Answered Live.

8. **What kind of meteorite was the Tunguska meteorite - was it an Iron meteorite? Were they able to work out from where it came?** Answered Live.

9. **How do amino acids form in space?** Answered Live.

10. **Will meteor impact patterns if present on Mars surface, indicate if water was present on the surface of mars during collision in the past?** Answered Live.

11. **There is no such thing as a perfect vacuum, therefore is the starting point gas vapour?** Answered Live.

12. **Why do meteorites break up coming down to earth?** Answered Live.

13. **Are there any records of anyone being hit by a meteorite?!** Answered Live.

14. **Christopher (11yrs) asks ... How do scientists think that Jupiter formed? What would happen to Jupiter if a meteor hit it when it was still being formed? And what would happen to a meteorite if it hit Jupiter now?** Answered Live.

15. **What is the source of the cosmic rays and do they impact on the bodies in the asteroid belt? If so, how do we differentiate between the Neon 21 generated in the belt?** Answered Live.

16. **Who owns the Winchcombe meteorite now?** Answered Live.

17. **Are meteorites worth a lot of money?** Answered Live.

18. **Do meteorites make a sonic boom when they go by? - like a plane?** **Answered Live.**

19. **How hot does it have to be to melt a planet?**

    Iron metal melts at about 1200-1500oC (exact temperature depends on alloy composition with Nickel, etc.) and silicates melt at 600-1900oC depending on type and whether there is water in the mix. To melt a whole planet from the heat of decaying radioactive Aluminium-26 mixed in with it would generate temperatures of several thousand ^{o}C in the interior, creating huge convective turbulence as this really hot material rose to the surface. These molten planets would have been exceptionally hostile places for a few million years at least.

20. **How do they monitor the meteors... it looked like security cameras on houses... apparently powered by Raspberry pi? How do we get involved in the citizen science project?**

    There are both UK and Global Meteor Camera Networks that record any meteor that passes their field of view. Combining the data from all of these allows a fairly accurate trajectory to be determined. Check out UKMON to find out more. The fancy doorbells are a bonus, but don't provide as much detail.

21. **Does the impact of the meteorite make the power go out?**

    A meteorite less than a ton or two in weight is slowed by the atmosphere from km/s to less than 100m/s, so no catastrophic effects and no effect on the power. But during its 'glowing phase' high in the atmosphere the ionised air around it can affect radio signals briefly.

22. **When the moons of mars crash into mars would they be classed as meteorites?**

    Yes, they would be meteorites (on Mars) but the size and speed of the impact would smash them to pieces.

Comments

◊ Thank you, Dr Mike...great talk!

◊ Thanks Mike, loved the explanation of the solar system forming.

◊ Fascinating talk, thank you!

◊ Most interesting talk!

◊ Excellent presentation, thank you. Looking forward to the lectures in Belfast resuming later in the year.

◊ Fascinating talk, thank you very much!

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