RESEARCHING REGOLITH

ON THE INTERNATIONAL SPACE STATION

1
00:00:00,350 --> 00:00:04,170
If you look at asteroids or if you look at
the moon, you'll see this layer of

2
00:00:04,170 --> 00:00:08,519
regolith covering the surface. So it's these
fine particles, fine dust, that covers the

3
00:00:08,519 --> 00:00:11,610
entire surface. So what's happening is
the solar system is very dynamic and we

4
00:00:11,610 --> 00:00:15,450
have asteroids and meteoroids moving
around and impacting different bodies. So

5
00:00:15,450 --> 00:00:18,750
that the surface is getting bombarded
all the time, so you have this fine layer

6
00:00:18,750 --> 00:00:20,440
of fragments on the surface.

7
00:00:20,440 --> 00:00:22,050
So why would we want to study it, right? And why would

8
00:00:22,050 --> 00:00:25,590
we want to study it on the space station?
There's a lot of interest in one day

9
00:00:25,590 --> 00:00:29,340
sending astronauts to asteroids, for
instance, and we have already sent a lot

10
00:00:29,340 --> 00:00:32,430
of robotic missions to asteroids a plan
to send more. And so every time we visit

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00:00:32,430 --> 00:00:35,520

these asteroids we learn more and more
and there's very diverse bodies of

12
00:00:35,520 --> 00:00:37,350
asteroids. Every asteroid seems to be
different.

13
00:00:37,350 --> 00:00:41,080
And so we would need to understand how
to interact with the asteroid surface.

14
00:00:41,080 --> 00:00:44,879
So if you're going to anchor to the surface
of the asteroid, for instance, we need to

15
00:00:44,879 --> 00:00:48,600
understand how to interact with the
regolith. So asteroids are pretty small

16
00:00:48,600 --> 00:00:52,440
bodies and so they have actually
microgravity levels of gravity, and so

17
00:00:52,440 --> 00:00:55,100
this is actually what you find on the
space station as well.

18
00:00:55,120 --> 00:00:56,540
There's four experiments

19
00:00:56,540 --> 00:00:59,520
and each one is a tube so
it's a clear polycarbonate tube about

20
00:00:59,520 --> 00:01:03,140
the size of a Pringles can, and so inside
this tube we have the asteroid simulants,

21
00:01:03,149 --> 00:01:06,210
and so this is what we're actually

studying and so the main piece of data

22
00:01:06,210 --> 00:01:08,850
that we're getting is the movement of
these particles. So we have a camera

23
00:01:08,850 --> 00:01:12,119
looking at each of these tubes. Over the
course of about a year that cassette one

24
00:01:12,119 --> 00:01:15,150
will be up there we'll get this
basically time-lapse imagery of the

25
00:01:15,150 --> 00:01:18,479
particles moving, and so we're looking at
the long-term effects of microgravity

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00:01:18,479 --> 00:01:20,840
and what's happened to the particles.

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00:01:20,840 --> 00:01:22,530
Also, something that we have on

28
00:01:22,530 --> 00:01:26,790
asteroids is vacuum, right, so we want to
expose our experiments to the vacuum of

29
00:01:26,790 --> 00:01:31,400
space. So we actually have our facility
hooked up essentially to a port to space.

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00:01:31,860 --> 00:01:35,400
We did cassette one but the idea is
that Hermes will be open to other

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00:01:35,400 --> 00:01:38,820
investigators so cassette two, cassette 3,
cassette 7, these will be other

32
00:01:38,820 --> 00:01:41,579
researchers that will apply to use
Hermes to do research on asteroid

33
00:01:41,579 --> 00:01:44,970
regolith and granular material
investigations, and we think that ISS is

34
00:01:44,970 --> 00:01:48,299
a wonderful place to study asteroid
regolith to study lunar regolith