



1
00:00:16,870 --> 00:00:14,709
we're here at the jet propulsion

2
00:00:18,230 --> 00:00:16,880
laboratory in pasadena california home

3
00:00:20,390 --> 00:00:18,240
of mars rovers

4
00:00:22,070 --> 00:00:20,400
but it turns out the folks working here

5
00:00:24,390 --> 00:00:22,080
are doing a lot more than that

6
00:00:25,509 --> 00:00:24,400
and i just happen to have here dr mike

7
00:00:27,750 --> 00:00:25,519
ressler he is a

8
00:00:28,950 --> 00:00:27,760
miri project scientist mary project

9
00:00:31,589 --> 00:00:28,960
scientist a mouthful

10
00:00:33,110 --> 00:00:31,599
what do you do in a nutshell so miri is

11
00:00:34,389 --> 00:00:33,120
an instrument that will fly on the james

12
00:00:36,229 --> 00:00:34,399
webb space telescope

13
00:00:37,990 --> 00:00:36,239

and it's sensitive to infrared light

14

00:00:39,990 --> 00:00:38,000

rather than visible wavelengths

15

00:00:41,270 --> 00:00:40,000

so we can see the heat from astronomical

16

00:00:43,510 --> 00:00:41,280

sources rather than

17

00:00:44,869 --> 00:00:43,520

the visible light that you see when if

18

00:00:45,430 --> 00:00:44,879

you look through a telescope with your

19

00:00:47,910 --> 00:00:45,440

eyes

20

00:00:49,110 --> 00:00:47,920

you are in charge of the production of

21

00:00:52,630 --> 00:00:49,120

the detectors

22

00:00:54,549 --> 00:00:52,640

are the sensors

23

00:00:55,910 --> 00:00:54,559

so if you have a digital camera there's

24

00:00:57,670 --> 00:00:55,920

a little electronic chip

25

00:00:59,590 --> 00:00:57,680

in the heart of the camera and that's

26

00:01:01,670 --> 00:00:59,600

the sensor it's what

27

00:01:03,110 --> 00:01:01,680

gathers the light from the lenses and

28

00:01:04,950 --> 00:01:03,120

converts it into a picture that you can

29

00:01:06,390 --> 00:01:04,960

look at in your computer later on

30

00:01:08,310 --> 00:01:06,400

so the instrument that we're working on

31

00:01:08,950 --> 00:01:08,320

does exactly the same thing let's take a

32

00:01:10,870 --> 00:01:08,960

look at it

33

00:01:11,990 --> 00:01:10,880

and i think we have to get into bunny

34

00:01:16,789 --> 00:01:12,000

suits is that right

35

00:01:20,149 --> 00:01:18,630

so much for getting my hair done today

36

00:01:30,870 --> 00:01:20,159

one size fits all

37

00:01:35,109 --> 00:01:33,190

we have a light source basically a very

38

00:01:36,630 --> 00:01:35,119

sophisticated little light bulb

39

00:01:38,230 --> 00:01:36,640

that's mounted in our test setup that's

40

00:01:40,069 --> 00:01:38,240

shining on the detector

41

00:01:42,389 --> 00:01:40,079

and the detector is collecting light in

42

00:01:45,030 --> 00:01:42,399

steps we can see that

43

00:01:47,910 --> 00:01:45,040

the detector is indeed very sensitive uh

44

00:01:49,990 --> 00:01:47,920

it responds very well to light

45

00:01:51,670 --> 00:01:50,000

by where it saturates we can tell how

46

00:01:52,149 --> 00:01:51,680

bright a star will be able to look at

47

00:01:55,830 --> 00:01:52,159

once

48

00:01:57,590 --> 00:01:55,840

the bright spots are bright because

49

00:01:59,429 --> 00:01:57,600

they're supposed no bad pixels no hot

50

00:02:02,069 --> 00:01:59,439

pixels you know everything's just as it

51
00:02:06,069 --> 00:02:04,230
the detectors go through environmental

52
00:02:08,229 --> 00:02:06,079
tests

53
00:02:09,270 --> 00:02:08,239
they're shaken and chilled to make sure

54
00:02:12,550 --> 00:02:09,280
they survive

55
00:02:15,589 --> 00:02:14,070
so now it's time to do a final

56
00:02:17,030 --> 00:02:15,599
inspection of the unit to make sure

57
00:02:18,390 --> 00:02:17,040
nothing's happened to it while we were

58
00:02:19,910 --> 00:02:18,400
doing the testing

59
00:02:21,670 --> 00:02:19,920
so we want to check it to make sure that

60
00:02:22,150 --> 00:02:21,680
nobody accidentally got a fingerprint on

61
00:02:23,670 --> 00:02:22,160
it

62
00:02:26,229 --> 00:02:23,680
we want to make sure there are no broken

63
00:02:27,830 --> 00:02:26,239

wires or other damage to the unit

64

00:02:30,949 --> 00:02:27,840

we want to make sure everything is just

65

00:02:32,470 --> 00:02:30,959

fine so we're really wrapping up and

66

00:02:34,070 --> 00:02:32,480

we're able to say this module is fully

67

00:02:36,550 --> 00:02:34,080

qualified and ready to go

68

00:02:37,750 --> 00:02:36,560

the mid-infrared instrument or miri has

69

00:02:39,670 --> 00:02:37,760

three detectors

70

00:02:40,869 --> 00:02:39,680

all of which have to be precisely

71

00:02:43,830 --> 00:02:40,879

aligned with each other

72

00:02:45,589 --> 00:02:43,840

to within half the width of a human hair