

STEMonstrations



SURFACE TENSION

1
00:00:00,700 --> 00:00:15,281
[MUSIC]

2
00:00:15,281 --> 00:00:15,915
>> WELCOME TO

3
00:00:15,915 --> 00:00:17,016
THE INTERNATIONAL SPACE STATION.

4
00:00:17,016 --> 00:00:18,118
I'M NASA ASTRONAUT

5
00:00:18,118 --> 00:00:19,352
RICKY ARNOLD.

6
00:00:19,352 --> 00:00:22,155
OUR VIEW FROM THE ISS OF EARTH

7
00:00:22,155 --> 00:00:23,823
IS ABSOLUTELY MAGNIFICENT.

8
00:00:23,823 --> 00:00:24,858
BUT WE QUICKLY REALIZED

9
00:00:24,858 --> 00:00:25,925
WE REALLY SHOULD CALL IT

10
00:00:25,925 --> 00:00:27,260
PLANET OCEAN.

11
00:00:27,260 --> 00:00:29,262
WE'RE MOSTLY A WATER PLANET.

12
00:00:29,262 --> 00:00:30,263
WATER OCCURS HERE

13
00:00:30,263 --> 00:00:31,664

IN ALL THREE PHASES:

14

00:00:31,664 --> 00:00:33,800

SOLID, LIQUID AND GAS.

15

00:00:33,800 --> 00:00:35,201

AND THE PRESENCE OF WATER

16

00:00:35,201 --> 00:00:36,603

ON OTHER PLANETS AND MOONS

17

00:00:36,603 --> 00:00:38,171

WITHIN OUR OWN SOLAR SYSTEM

18

00:00:38,171 --> 00:00:39,939

HAS US WONDERING:

19

00:00:39,939 --> 00:00:41,708

IS THERE LIFE THERE, TOO?

20

00:00:41,708 --> 00:00:43,676

BUT WHY IS WATER SO SPECIAL?

21

00:00:43,676 --> 00:00:44,811

ONE REASON IS CALLED

22

00:00:44,811 --> 00:00:46,513

SURFACE TENSION.

23

00:00:46,513 --> 00:00:48,281

WELL, WHAT IS SURFACE TENSION?

24

00:00:48,281 --> 00:00:51,451

LET'S HAVE A LOOK.

25

00:00:51,451 --> 00:00:52,685

SURFACE TENSION IS A PROPERTY

26

00:00:52,685 --> 00:00:53,553

OF LIQUIDS IN WHICH

27

00:00:53,553 --> 00:00:55,422

MOLECULES OF ONE SUBSTANCE

28

00:00:55,422 --> 00:00:56,389

ARE MORE ATTRACTED TO

29

00:00:56,389 --> 00:00:57,991

EACH OTHER THAN TO MOLECULES

30

00:00:57,991 --> 00:00:59,893

OF ANOTHER SUBSTANCE.

31

00:00:59,893 --> 00:01:00,994

WATER IS UNIQUE IN THAT

32

00:01:00,994 --> 00:01:02,562

IT HAS A HIGH SURFACE TENSION

33

00:01:02,562 --> 00:01:04,397

COMPARED TO OTHER LIQUIDS.

34

00:01:04,397 --> 00:01:05,398

THIS IS DUE TO

35

00:01:05,398 --> 00:01:07,233

ITS POLAR PROPERTY.

36

00:01:07,233 --> 00:01:08,501

THE POSITIVE HYDROGEN ENDS

37

00:01:08,501 --> 00:01:10,537

AND THE NEGATIVE OXYGEN ENDS

38

00:01:10,537 --> 00:01:12,539

CREATE A STRONG BOND.

39

00:01:12,539 --> 00:01:14,541

AS THEY SAY, OPPOSITES ATTRACT,

40

00:01:14,541 --> 00:01:16,409

SO THE HYDROGEN END OF THE WATER

41

00:01:16,409 --> 00:01:18,244

TENDS TO STICK TO THE OXYGEN END

42

00:01:18,244 --> 00:01:20,847

IN A NEARBY WATER MOLECULE.

43

00:01:20,847 --> 00:01:22,115

AT WATER'S SURFACE,

44

00:01:22,115 --> 00:01:23,516

ITS MOLECULES ARE ONLY

45

00:01:23,516 --> 00:01:25,251

ATTRACTED TO THE WATER MOLECULES

46

00:01:25,251 --> 00:01:27,320

BELOW AND TO THE SIDES OF THEM,

47

00:01:27,320 --> 00:01:28,254

AS THERE IS ONLY AIR

48

00:01:28,254 --> 00:01:29,789

ABOVE THESE MOLECULES.

49

00:01:29,789 --> 00:01:31,057

SO THE SURFACE MOLECULES OF

50

00:01:31,057 --> 00:01:33,126

A BODY OF WATER ARE PULLED DOWN,

51
00:01:33,126 --> 00:01:34,394
CREATING A MORE STABLE,

52
00:01:34,394 --> 00:01:35,895
STRONGER ENVIRONMENT.

53
00:01:35,895 --> 00:01:36,930
THAT IS WHY CERTAIN ANIMALS

54
00:01:36,930 --> 00:01:38,031
LIKE THE WATER STRIDER

55
00:01:38,031 --> 00:01:39,499
CAN ACTUALLY WALK ON THE SURFACE

56
00:01:39,499 --> 00:01:42,302
OF WATER.

57
00:01:42,302 --> 00:01:43,036
HERE ON THE INTERNATIONAL

58
00:01:43,036 --> 00:01:44,471
SPACE STATION, THE MICROGRAVITY

59
00:01:44,471 --> 00:01:45,905
ENVIRONMENT MAKES IT EASY

60
00:01:45,905 --> 00:01:46,773
TO SHOW HOW WELL

61
00:01:46,773 --> 00:01:48,475
WATER USES SURFACE TENSION

62
00:01:48,475 --> 00:01:50,944
TO STICK TOGETHER.

63
00:01:50,944 --> 00:01:52,579

WE EVEN RELY ON SURFACE TENSION

64

00:01:52,579 --> 00:01:54,747

TO HELP US WASH OUR HAIR...

65

00:01:54,747 --> 00:01:57,984

THOSE OF US THAT HAVE A LOT.

66

00:01:57,984 --> 00:01:59,018

THANKS FOR COMIN' ALONG TODAY

67

00:01:59,018 --> 00:01:59,953

AND LEARNING A LITTLE BIT

68

00:01:59,953 --> 00:02:01,488

ABOUT SURFACE TENSION.

69

00:02:01,488 --> 00:02:02,856

WANT TO LEARN MORE ABOUT

70

00:02:02,856 --> 00:02:04,424

THE UNIQUE PROPERTIES OF WATER

71

00:02:04,424 --> 00:02:06,025

AND DO YOUR OWN EXPERIMENTS?

72

00:02:06,025 --> 00:02:07,460

TRY OUT THE ACTIVITY

73

00:02:07,460 --> 00:02:08,761

RELATED TO THIS VIDEO

74

00:02:08,761 --> 00:02:11,698

AT THE STEMONSTRATIONS WEBSITE.