

# It's not lunacy: probes find Water in Moon Dirt

(AP) -- The moon isn't the dry dull place it seems. Traces of water lurk in the dirt unseen.

Three different space probes found the chemical signature of water all over the moon's surface, surprising the scientists who at first doubted the unexpected measurement until it was confirmed independently and repeatedly.

It's not enough moisture to foster homegrown life on the moon. But if processed in mass quantities, it might provide resources - drinking water and rocket fuel - for future moon-dwellers, scientists say. The water comes and goes during the lunar day.

It's not a lot of water. If you took a two-liter soda bottle of lunar dirt, there would probably be a medicine dropperful of water in it, said University of Maryland astronomer Jessica Sunshine, one of the scientists who discovered the water. Another way to think of it is if you want a drink of water, it would take a baseball diamond's worth of dirt, said team leader Carle Pieters of Brown University.

"It's sort of just sticking on the surface," Sunshine said. "We always think of the moon as dead and this is sort of a dynamic process that's going on."

The discovery, with three studies bring published in the journal Science on Thursday and a NASA briefing, could refocus interest in the moon. The appeal of the moon waned after astronauts

### Most Popular on ECNMag.com:

- [Fusion: the power source of the future \[1\]](#)
- [Industry Alert on Counterfeit DC/DC Converters \[2\]](#)
- [California to Regulate Television Efficiency \[3\]](#)
- [Edison-socket LED Bulbs last up to 19 years \[4\]](#)
- [RGBW LED generates 1,500 lm+ of combined white light \[5\]](#)
- [Cree Repeats as Lighting for Tomorrow Grand Prize Winner \[6\]](#)
- [Device Creates North-Finding Artificial Sense \[7\]](#)
- [Google to reincarnate digital books as paperbacks \[8\]](#)
- [Obama wants worldwide end of fossil fuel subsidies \[9\]](#)
- [Microsoft files lawsuits against](#)

## It's not lunacy: probes find Water in Moon Dirt

Published on Electronic Component News (<http://www.ecnmag.com>)

---

visited 40 years ago and called it "magnificent desolation."

['malvertisers'](#)

**[10]**

The announcement comes two weeks before a NASA probe purposely smashes near the moon's south pole to see if it can kick up buried ice. Over the last decade, astronomers have found some signs of underground ice on the moon's poles. But this latest discovery is quite different. It finds unexpected and pervasive water clinging to the surface of soil, not absorbed into it.

"It is drier than any desert we have here," Sunshine said.

The water was spotted by spacecraft that either circled the moon or flew by. All three ships used the same type of instrument that looked at the absorption of a specific wavelength of light that is the chemical signature of only two molecules: water and hydroxyl. Hydroxyl is one atom of hydrogen with one atom of oxygen, instead of two hydrogen atoms in water.

Because of the timing during the daylight when some of that wavelength disappears and some doesn't, it shows that both hydroxyl and water are present, Sunshine said.

This light wavelength was first discovered by an instrument on the Indian lunar satellite Chandrayaan-1, which stopped operating last month. Scientists initially figured something was wrong with the instrument because everyone knew the moon did not have a drop of water on the surface, Pieters said.

"We argued literally for months amongst ourselves to find out where the problem was," Pieters said. Sunshine, who was on the team, had a similar instrument on NASA's Deep Impact probe, headed for a comet but swinging by the moon in June.

## **It's not lunacy: probes find Water in Moon Dirt**

Published on Electronic Component News (<http://www.ecnmag.com>)

---

So Deep Impact looked for the water-hydroxyl signature - and found it.

Scientists also looked back at the records of NASA's Cassini probe, which is circling Saturn. It has the same type instrument and whizzed by the moon ten years ago. Sure enough, it had found the same thing.

The chance that three different instruments malfunctioned in the same way on three different spaceships is almost zilch, so this confirms that it's water and hydroxyl, Pieters said.

"There's just no question that it's there," Pieters said. "It's unequivocal."

Scientists testing lunar samples returned to Earth by astronauts did find traces of water, but they had figured it was contamination from moisture in Earth air, Pieters said.

Three scientists who were not part of the team of discoverers said the conclusion makes sense, with Arizona State University's Ron Greeley using the same word as Pieters: unequivocal.

Lunar and Planetary Institute senior scientist Paul Spudis called it exciting and said it raises the logical question: Where did that water come from?

Pieters figures there are three possibilities: It came from comets or asteroids that crashed into the moon, those crashes freed up trapped water from below the surface, or the solar wind carries hydrogen atoms that binds with oxygen in the dirt. That final possibility is the one that Sunshine and Pieters both prefer.

If it is the solar wind, that also means that other places without atmosphere in our solar system, such as Mercury or

## **It's not lunacy: probes find Water in Moon Dirt**

Published on Electronic Component News (<http://www.ecnmag.com>)

---

asteroids, can also have bits of water,  
Sunshine said.

### **Source URL (retrieved on 10/01/2014 - 10:55am):**

<http://www.ecnmag.com/news/2009/09/its-not-lunacy-probes-find-water-moon-dirt>

### **Links:**

- [1] <http://www.ecnmag.com/article-fusion-power-source-of-the-future-092109.aspx>
- [2] <http://www.ecnmag.com/news-Counterfeit-DC-DC-Converters-091809.aspx>
- [3] <http://www.ecnmag.com/news-California-to-Regulate-Television-Efficiency-092109.aspx>
- [4] <http://www.ecnmag.com/article-everled-leds-091709.aspx>
- [5] <http://www.ecnmag.com/product-LED-1500-lm-white-light-091809.aspx>
- [6] <http://www.ecnmag.com/news-cree-lighting-for-tomorrow-092109.aspx>
- [7] <http://www.ecnmag.com/blog-north-finding-sense-091709.aspx>
- [8] <http://www.ecnmag.com/article-Google-to-reincarnate-digital-books-as-paperbacks-091709.aspx>
- [9] <http://www.ecnmag.com/news-obama-fossil-fuel-subsidies-092309.aspx>
- [10] <http://www.ecnmag.com/article-Microsoft-files-lawsuits-against-malvertisers-091809.aspx>