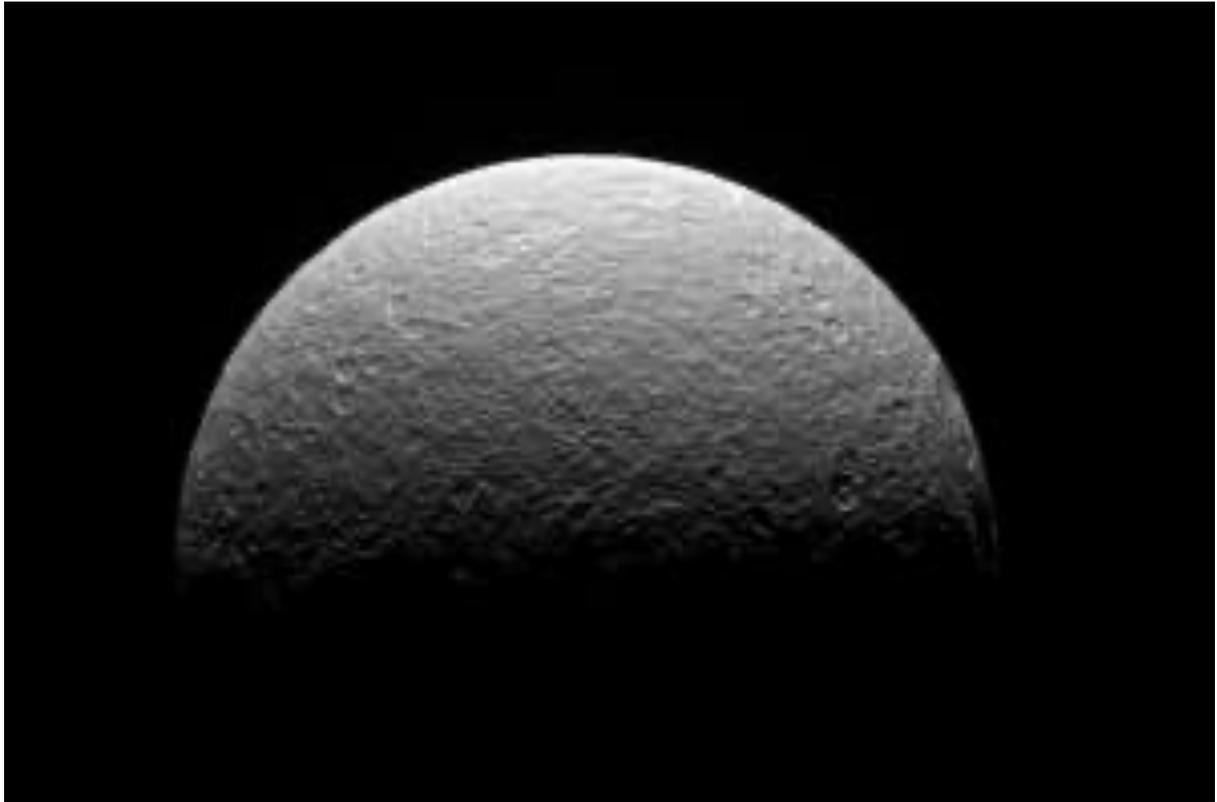


# Puzzling signal on Saturn's moon Rhea may finally be explained

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By [Leah Crane](#)



An image from Cassini of Saturn's icy moon Rhea

NASA/JPL-Caltech/Space Science Institute

A mystery on Saturn's moon Rhea may have finally been solved. When NASA's Cassini spacecraft flew past the planet's second-largest moon before the end of its mission in 2017, it spotted a mysterious compound. It turns out, that compound may be hydrazine, which is often used in rocket fuel.

As Cassini flew past Saturn's moons, it examined the sunlight bouncing off their surfaces to determine what they are made of. On Rhea, as well as several of the [other moons](#), something on the surface absorbed a portion of that light in the ultraviolet range of the spectrum.

"We noticed there was this dip in the spectrum and wondered what it was, but we speculated that it might be some type of water ice," says Amanda Hendrix at the Planetary Science Institute in California. "We puzzled over what it is for a long time."

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She and her colleagues observed how light bounced off several compounds in laboratory experiments, and found two that seemed to match what Cassini saw on Rhea: hydrazine and chlorine. While either could be a match for Cassini's observations, it is hard to come up with a way for chlorine to be produced on Rhea's surface, Hendrix says.

Hydrazine, on the other hand, could be made in reactions between chemicals that we know exist on the icy moon. It could also float over from the thick atmosphere of the [neighbouring moon Titan](#). Even though Cassini did use hydrazine as fuel for its thrusters, those thrusters were never fired near Rhea, so the researchers are confident that it didn't come from the spacecraft.

"This is a possible explanation for the feature on Rhea, but we still have work to do to figure out why it occurs on other moons," says Hendrix. "This is a clue to some process that is happening in the whole Saturn system, and probably elsewhere as well."