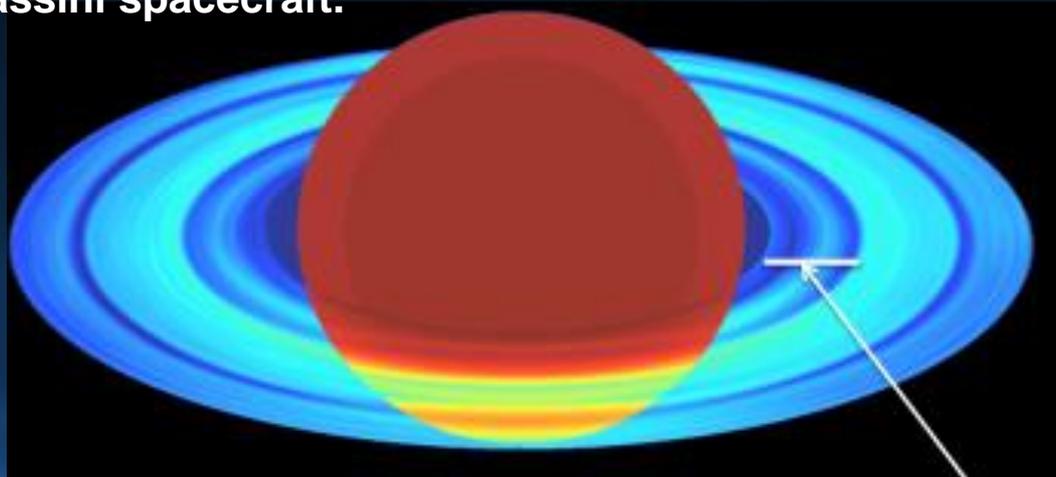




A Shattered “Centaur” Buried in the Icy Rings of Saturn?

The center of Saturn’s C ring may be the final resting place for a broken-up minor planet (called a Centaur) captured and torn apart by Saturn’s gravity, according to recent measurements from the Cassini spacecraft.

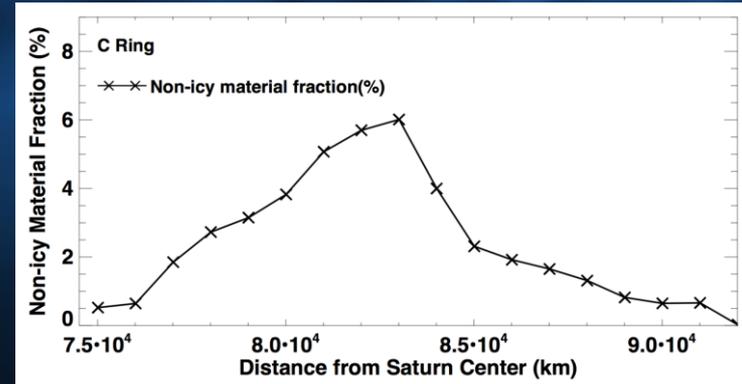
Cassini scientists have used the RADAR instrument to penetrate the mostly-icy C ring particles to reveal the fraction of silicates inside. They found that this ring contains 1 to 2 percent silicates, most likely due to meteoroid bombardment over the last 15 to 90 million years.



The output brightness temperature map generated from Cassini RADAR data. Red is hotter material, blue is colder.

More of the rocky material was found in the center of the C ring than at the ring edges, an unusual distribution which suggests that an incoming Centaur (a type of minor planet that orbits the Sun between Jupiter and Neptune) was captured by Saturn and deposited in the rings around 10 to 20 million years ago. Over time this rocky body was broken into pieces, spreading out and forming the silicate-rich center of the C ring we see today.

Such discoveries reveal that Saturn may have had a more colorful history than previously believed, and may also inform new missions to explore rocky bodies like Trojan asteroids.



The non-icy material fraction is highest in the middle of the C ring.

Zhang, *et al.* (2017) *Icarus*