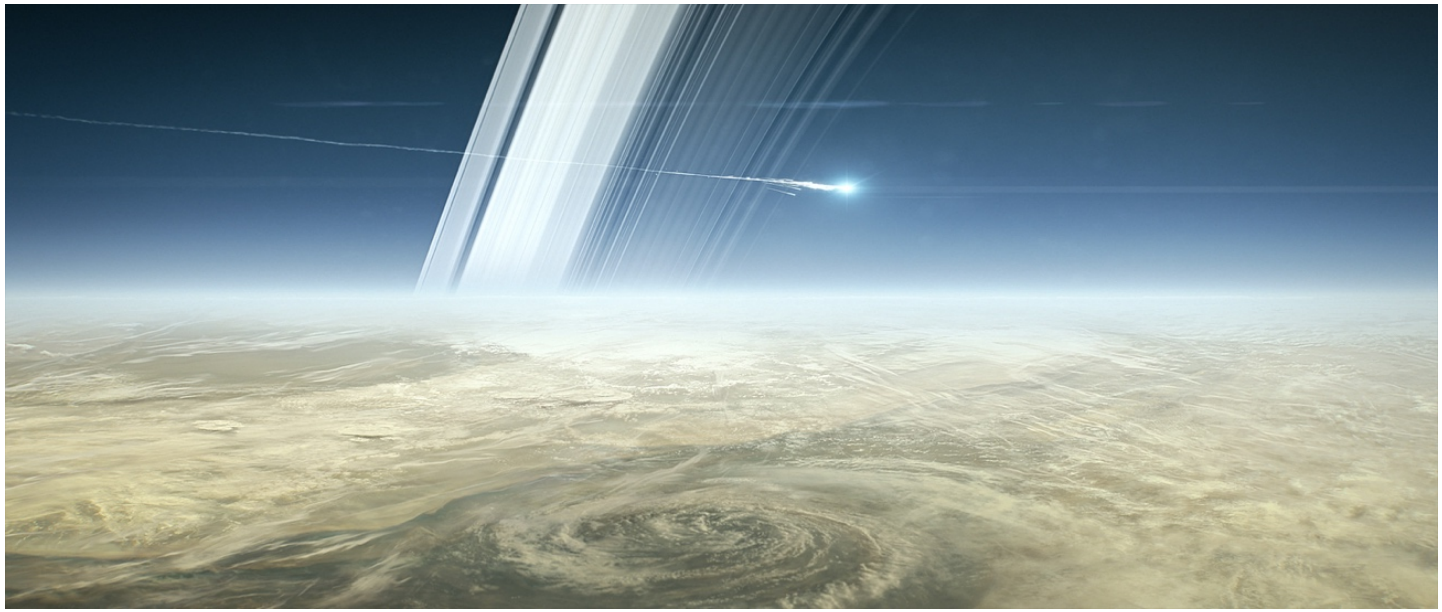
TiSurf®
TitaniumSurfaceTechnology



Credit: NASA/JPL-Caltech - https://saturn.jpl.nasa.gov/resources/7635/

September 12, 2017

CASSINI'S GRAND FINALE, SEPTEMBER 15, 2017

SentinaBay and its parent company, NewSoTech, are proud to have been a part of NASA/ESA's extremely successful research project, Cassini. The project is perhaps the greatest accomplishment of man in outer space to date.

After nearly twenty years in space, NASA's Cassini spacecraft is nearing the end of its remarkable journey of exploration. Having expended almost every bit of the plutonium it carried as fuel to Saturn, operators are deliberately plunging Cassini into the planet to ensure Saturn's moons will remain uncontaminated for future exploration—in particular, the ice-covered, ocean-bearing moon, Enceladus, but even Titan, with its intriguing pre-biotic chemistry.

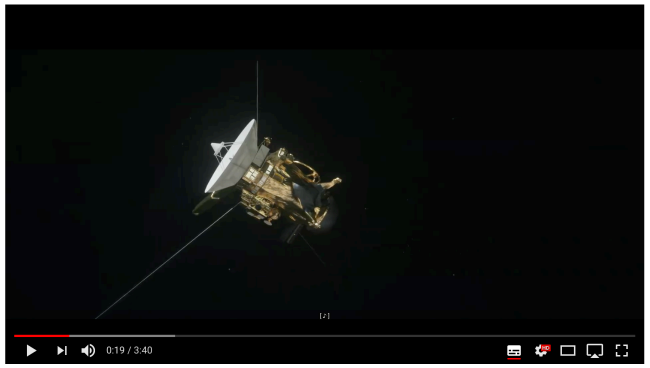
To its very end, Cassini is a mission of thrilling exploration. Launched on October 15, 1997, the mission entered orbit around Saturn on June 30, 2004, carrying the European Huygens probe. After its four-year prime mission, Cassini's tour was extended twice. Its key discoveries have included the global ocean with indications of hydrothermal activity within Enceladus, and liquid methane seas on Titan.

In 2010, Cassini began a seven-year mission extension in which it completed many moon flybys while observing seasonal changes on Saturn and Titan. The plan for this phase of the mission was to use up all of the spacecraft's fuel while exploring Saturn, ending with a plunge into the planet's atmosphere. In April 2017, Cassini was placed on an impact course that unfolded over five months of daring dives—a series of 22 orbits that each pass between the planet and its rings. Called the Grand Finale, this final phase of the mission has brought unparalleled observations of the planet and its rings from closer than ever before.

On September 15, 2017, the spacecraft will make its final approach to the giant planet Saturn. But this encounter will be like no other. This time, Cassini will dive into the planet's atmosphere, sending science data for as long as its small thrusters can keep the spacecraft's antenna pointed toward Earth. Soon after, Cassini will burn up and disintegrate like a meteor.

And although the spacecraft may be gone after the finale, its enormous collection of data about Saturn—the giant planet itself, its magnetosphere, rings and moons—will continue to yield new discoveries long into the future.

See NASA's movie about Cassini mission and its grand finale, https://www.youtube.com/watch?v=xrGAQCq9BMU&sns=em.



SentinaBay is honored that its TiSurf process® for depth hardening of titanium was chosen to protect the sensitive Langmuir probe responsible for transmitting information about the plasma around Saturn and its moons back to Earth. Cassini is the first of several space missions to carry a TiSurf®-treated Langmuir probe. The Langmuir probe is a kind of "cosmic weather station" that is part of the Radio and Plasma Wave Science (RPWS) instrument suite, designed and built by the Swedish Institute of Space Physics, and has been operated almost continuously since Cassini's arrival at Saturn in July 2004.

While TiSurf® on Cassini has remained unchanged in outer space for two decades, TiSurf® on Earth has undergone significant development during the time that has passed since October 1997. TiSurf® of yesterday has proven itself to stand both the test of time as well as the extreme conditions of outer space on Cassini. TiSurf® of today possesses not only the same outstanding qualities as before but even more, and is now ready to be commercialized for industrial use on Earth as well.

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TitaniumSurfaceTechnology

MORE INFORMATION

- NASA Cassini – The grand finale, https://saturn.jpl.nasa.gov/news/3016/making-cassinis-grand-finale/
- More information about the Cassini Solstice Mission, http://saturn.jpl.nasa.gov/
- Information about TiSurf® can be found at, http://www.tisurf.se

Space missions with TiSurf® processed instruments

- **MAVEN** – Mars, 2 **TiSurf®-processed Langmuir probes** from LASP, Colorado.
- **SWARM** – 3 satellites in orbit around Earth, each with a **TiSurf®-processed Langmuir probe** from IRFU.
- **MMS** – 4 satellites in orbit around Earth, in total 16 **TiSurf®-processed Langmuir probes** from IRFU/KTH.
- **Cassini** – Saturn, 1 **TiSurf®-processed Langmuir probe** from IRFU (end of mission September 15, 2017).
- **Rosetta** – Comet 67P, 2 **TiSurf®-processed Langmuir probes** from IRFU (end of mission September 30, 2016).
- **DEMETER** – Earth, 2 **TiSurf®-processed Langmuir probes** from ESA/ESTEC (went silent in March 2011)
- **Astrid-2** – Earth, 2 **TiSurf®-processed Langmuir probes** from IRFU (contact lost July 1999).

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SentinaBay

- Changing the future with TiSurf® Titanium Technology

SentinaBay's mission is commercialization of TiSurf® through licensing of technology, and sales and marketing of components. The company is focused on solutions for environmentally friendly, low-energy applications. SentinaBay is open to partnership, joint venture, co-owned companies and partial ownership. The company is headquartered in Sandviken, Sweden, and the primary owners are NewSoTech, Almi Invest, and Sandviken Investors.