

Voyage to icy Pluto seeks to learn how the solar system was forged

Contrast this piece to Hoffman's imagination and misinformation

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A spacecraft named New Horizons is about to embark on an extraordinary 10-year voyage to Pluto, the frozen planet nearly 4 billion miles away that orbits on the very outer edge of the solar system where no engineered visitor from Earth has ever ventured.

NASA scientists and engineers announced Sunday that all systems are ready to launch the craft from the Kennedy Space Center in Florida early Tuesday afternoon on a mission that scientists hope will give the world new insights into the formation of the solar system some 4.5 billion years ago.

"This will be the Everest of planetary exploration," New Horizon's chief scientist, Alan Stern of the Southwest Research Institute in Boulder, Colo., said during a Webcast briefing.

Pluto lies within a vast ring of icy dwarf objects known as the Kuiper Belt, a wilderness of fossil mini-planets where thousands of comets begin their flaring passage through the inner solar system and hundreds of thousands more remain in distant solar orbit.

Discovered only in 1930 by the late astronomer Clyde Tombaugh, Pluto is now known to be a binary planet.

Scientists suspect it formed early in the history of the solar system when some unknown object crashed into it, then split apart from it to become its major moon, Charon.

New Horizons, when it reaches its target in 2015, also will explore Charon and then spend five months or more closely examining one or two other objects in the Kuiper Belt.

From observations by the orbiting Hubble telescope and by major observatories on Earth, astronomers have learned that Pluto's surface consists of solidly frozen nitrogen, carbon monoxide and methane, as well as water ice -- all of them perhaps surrounding a rocky core.

But the planet's surface may also hold spouting ice geysers, and its pinkish-orange color may be due to a coating of complex organic molecules, said astrophysicist Dale Cruikshank of NASA's Ames Research Center in Mountain View.

At Pluto's perpetual temperature of some 387 degrees below zero Fahrenheit, however, no one believes that any life form would be possible.

"We're expecting the unexpected," Cruikshank told reporters at the briefing after NASA engineers had given the go-ahead for Tuesday's launch.

Pluto's surface ices are known to be evaporating at a rate of some 3 million tons a year, according to planetary scientist Fran Bagenal of the University of Colorado.

As those gases have spewed into space for billions of years, the planet has acted like a colossal comet, she said.

Less than 1,500 miles in diameter, Pluto is the smallest planet in the solar system and only two-thirds the size of Earth's moon.

Although it is the first to be discovered within the Kuiper Belt, it is apparently by no means the largest planet there. In July, astronomers reported observing at least one object in the region bigger than Pluto. They named the object, more than 1,800 miles in diameter, Xena and said they also detected at least two other Kuiper Belt objects close to Pluto's size.

Sophisticated instruments on New Horizons will hibernate inside a protective thermal blanket as the spacecraft speeds at 30,000 mph -- the swiftest ever space-bound vehicle -- past Jupiter and then picks up its speed to 47,000 mph and reaches Pluto by July 2015.

Because sunlight is far too dim at Pluto to provide solar power for the instruments, radioactivity from 18 tiny pellets of plutonium -- not the isotope used in nuclear weapons -- will generate electricity.

The instruments will take hundreds of pictures of Pluto and Charon, analyze the planet's surface gases and geology, measure its temperatures and study how the planet interacts with the solar wind -- the high-speed stream of charged particles that flow constantly from the sun.

"We're poised to investigate a new world," said Cruikshank.