Re: Key "Stardust" spacecraft discovery may have been contamination (Forwarded)

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"Andrew Yee" <ayee@xxxxxxxxxxxxxxxxxxxxx> wrote in message news:Pine.LNX.4.30.0704151002190.6959−100000@xxxxxxxxxxxxxxxxxxxxxxxx

> American Chemical Society
> Washington, D.C.
>
> EMBARGOED FOR 9 A.M., EASTERN TIME, April 9, 2007
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> Key "Stardust" spacecraft discovery may have been contamination
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> One of the biggest scientific surprises from last year's "Stardust" space mission may have resulted from contamination from the spacecraft's rocket boosters, scientists in Spain are cautioning in a report scheduled for publication in the May 16 issue of ACS' Energy & Fuels, a bi−monthly journal.
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> Stardust was the first U.S. mission to capture samples of a comet (Comet Wild 2) and return that material, believed to hold clues to the origin of the solar system, to Earth for scientific analysis. In the report, Jesus Martinez−Frias and colleagues point out that scientists were surprised to find that Stardust had collected tiny grains of the mineral osbornite, which chemically is titanium nitride. Osbornite forms only at ultra−hot temperatures of about 3,140 Fahrenheit. Scientists thus concluded that the osbornite could have formed near the sun, and ejected to the outer reaches of the solar system −− an indication that the infant solar system was a much more violent and tumultuous place then previous believed.
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> Martinez−Frias and colleagues stress the plausibility and significance of such hypothesis, but suggest another possible explanation for osbornite presence, which they say has not yet been considered. They point out that Stardust's rocket thrusters used a propellant of ultra−pure hydrazine, which chemists long have used for the so−called nitration reactions used to make titanium nitride on Earth.

http://space.newscientist.com/article/mg19425993.400−nasa−says−space−find−isnt−just−rocket−fuel.html
"No chance," says Stardust researcher Michael Zolensky at NASA's Johnson

Space Center in Houston, Texas. "The titanium nitride grains are sitting inside of other minerals, which are sitting inside other minerals" in a single particle that penetrated very deep into the fluffy aerogel that collected the comet dust, Zolensky says.

Also, there is no trace of osbornite elsewhere on the dust collector, nor on a separate "witness" aerogel that was shielded from comet dust to show up any contamination from the spacecraft.

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