NASA probe could reveal comet life, scientists claim

June 29 2005

UK team say Deep Impact will reveal organic matter

Cardiff (UK) scientists are playing a major role in a NASA mission, which they believe could reveal living matter in the icy layers beneath the surface of a comet.
NASA's Deep Impact spacecraft will make a historic encounter with Comet Tempel-1 on 4th July, when a metre-long projectile will crash into the comet and tunnel through its outer layers, producing a crater and a plume of gas and dust.

UK astronomers involved in monitoring the comet before, during and after the impact and interpreting the results include Cardiff University's Professor Chandra Wickramasinghe and Dr Max Wallis at the Cardiff Centre for Astrobiology. They will conduct their study through instruments on the mother spacecraft.

The Cardiff scientists predict that Deep Impact will verify their theory that the outer crust of the comet will consist of asphalt-like material with permafrost beneath. The small icy fragments blasted out by the impact will include organic matter, they suggest.

The mainly copper projectile will hit the comet at 25,000 miles per hour and will penetrate 15-20 metres into the surface before exploding. The comet will remain intact despite losing a huge amount of material – 100,000 tonnes from a 100 metre diameter crater, and the impact is not expected to alter the comet's orbit.

"Not only is Deep Impact a spectacular experiment, it is also a test for our long-standing arguments," added Professor Wickramasinghe. "It will show, we believe, that a comet is not a rubble pile, nor a conglomerate of ices, but a porous mass of organics and ice under the black asphalt crust."

Comets are thought to have accumulated from a mixture of ices and organic interstellar dust at the time the solar system was formed some 4.6 billion years ago.

"This material is quite porous, so it is daring again to predict that subsurface ponds or lakes form transiently due to heat penetrating the exterior crust. We can thus expect biology on comets to have similarities with antarctic biology," added Professor Wickramasinghe.

Source: Cardiff University