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We are stardust, says scientist as probe brings back clues to life
By Mark Henderson, Science Correspondent

A MILLION wisps of space dust that will illuminate the origins of the solar system and life on Earth were in the hands of scientists last night after the probe that collected them from the tail of a comet made a triumphant landing in the Utah desert.

The Stardust capsule floated to Earth at 3.12am local time (10.10am GMT) yesterday, ending a six-year journey across almost three billion miles that will help to answer some of the most exciting questions in astronomy. The perfect touchdown brought cheers and applause from relieved researchers, who had watched anxiously as a fireball streaked across the night sky at 29,000mph (47,000kmh) ? which was a record speed for a spacecraft re-entering the atmosphere.

Many had feared that the probe might suffer the same fate as the Genesis mission to catch particles from the solar wind, which smashed apart on landing in 2004 after its parachutes failed to open.

Though Stardust's descent system was similar to that of Genesis, there was no disaster this time: its drogue parachute deployed at 100,000ft (30,000m) and the main parachute opened five minutes later to guide it to a soft landing.

³Things went like clockwork,² said Tom Duxbury, of Nasa, the project manager. ³As soon as we saw the drogue chute open we knew we were home safe.²

A helicopter recovery team found the capsule within half an hour of touchdown and transferred it to a special clean room at the Michael Army

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Air Field. Scientists were stowing it in a special aluminium case last night before shipping it to the Johnson Space Centre on Tuesday, where it will be opened.

Inside are up to a million particles collected in January 2004, when Stardust flew through the tail of the Wild 2 comet. Because comets are icy remnants from the dawn of the solar system about 4.5 billion years ago, they are expected to reveal clues about how stars and planets are formed, and even about the beginnings of life. ³Comets are made out of the initial building blocks of our solar system,² said Don Brownlee, of the University of Washington, Stardust's chief scientist.

³We are stardust because our planet and even ourselves have a direct relation to the blocks we have brought back this morning.² Dr Brownlee said that his team had watched spellbound at the landing site at Dugway Proving Ground as the probe on which they had worked for ten years appeared as a falling fireball overhead.

³It was a reddish colour like a torch, that lasted about half a minute with a luminous trail behind it,² he said. ³It's ironic that a comet mission should end by producing a comet. It was an absolute thrill and inside this thing was our treasure.²

The capsule's contents will be removed under sterile conditions, but that is to prevent contamination of the samples rather than as a quarantine measure.

Comets contain the building blocks of life but as they fly through the extreme cold of the outer solar system and carry no liquid water, scientists think it nearly impossible that they could harbour biological material. Any return mission from a planet such as Mars, however, would be treated with more caution because there is a remote possibility that bacteria that may exist there could survive the trip to Earth.

Once the particles have been removed, they will be distributed to more than 150 world scientists for six months of preliminary analysis.

Matthew Genge, of Imperial College, London, said he could not wait to get his hands on the samples, adding: ³This has been the most exciting weekend for 30 years for planetary scientists.²

³It is the first time since the Apollo missions that samples of rock have been returned from space to Earth. This thousandth of a gram of dust from comet Wild 2 will probably tell us more about the formation of the solar system than the last 100 years of telescope observations. It is a great time to be into dust.²

A three-billion-mile space odyssey

Launched on February 7, 1999, from Cape Canaveral, Stardust has travelled nearly 3 billion miles

On January 2, 2004, flies through tail of comet Wild 2, taking close-up pictures and collecting up to a million grains of dust from the tail

The mother ship releases sample return capsule at 5.57am GMT yesterday.

It enters atmosphere at 9.57am

Capsule lands in Utah desert at 10.10am and is located in 30 minutes

It will go to the Johnson Space Centre, Houston. Its contents will be shared with researchers around the world

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