

# SCI|TECH

THE BATTALION

Page 3 • Wednesday, February 25, 2004

## Red rover

### A&M's Lemmon to speak about NASA's Mars Exploration Rover Mission

By Amelia Williamson  
THE BATTALION

This Saturday, Mark Lemmon of the Texas A&M Department of Atmospheric Sciences will present the pictures taken by the Mars rovers, Spirit and Opportunity. Lemmon is part of NASA's Mars Exploration Rover Mission team and will discuss the accomplishments of the Mars rovers and display 3-D pictures of the Mars' surface that the audience will get to view through 3-D goggles. The presentation will be held in Rudder Auditorium at 3 p.m.

Lemmon is an atmospheric scientist on the Mars Rover Team and studies the dust in the martian atmosphere to help determine the history of water on Mars. He also works on the camera team.

"We monitor (the cameras) as they send data back to make sure they have no problems," Lemmon said. "And we take the raw, black-and-white pictures and generate the color panoramic pictures for public release."

The goal of the Mars Exploration Rover Mission is to "seek to determine the history of climate and water at two sites on Mars where conditions may once have been favorable to life," according to NASA's Mars Web site. One of the two Mars rovers, Spirit, landed on Jan. 3, 2004, and the other, Opportunity, landed on Jan. 25, 2004. The two rovers are identical and only differ in the landing site. Spirit landed in the Gusev crater, which is a large basin that may have been filled with water at one point.

"Spirit has scientific instruments that are characterizing the chemistry and mineralogy of the rocks (in the crater) in hope of seeing into Gusev's history," Lemmon said.

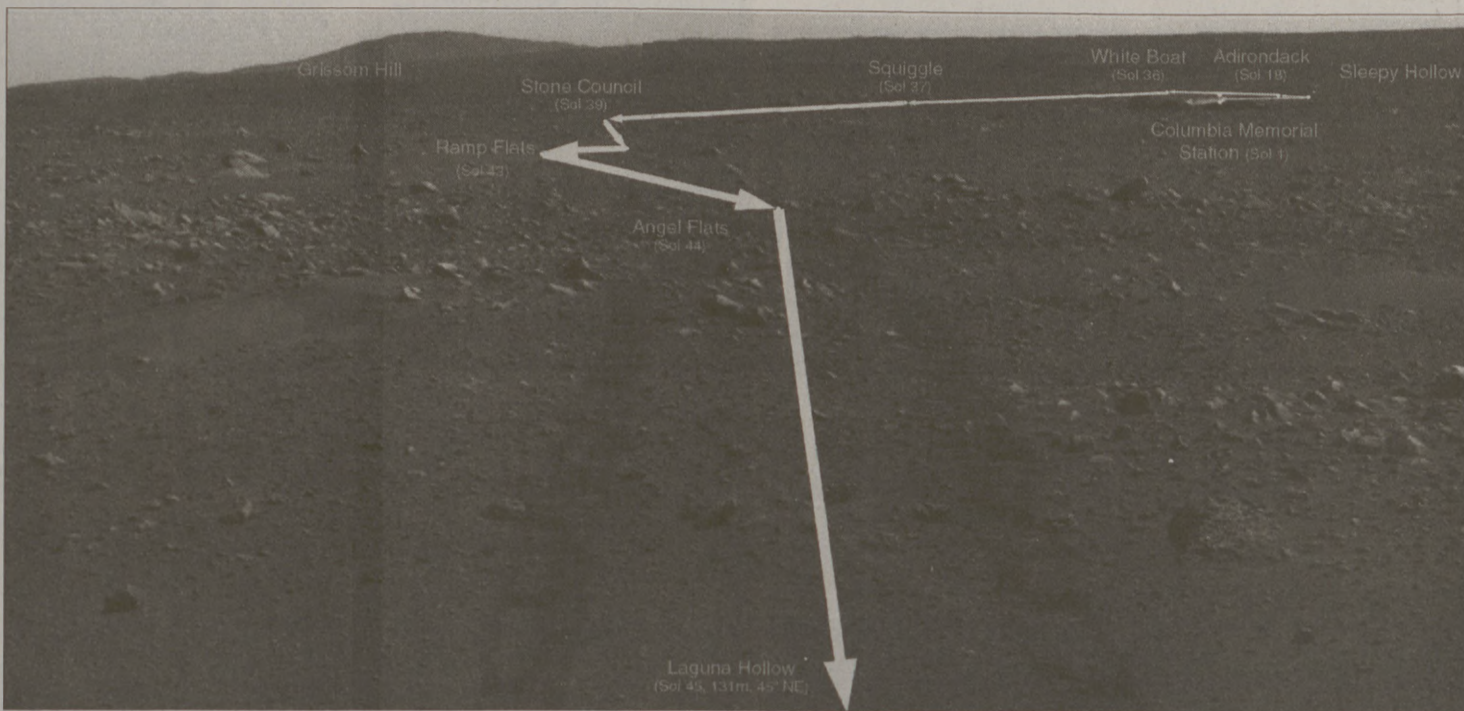
By studying the formation of rocks in the Gusev crater, scientists can determine if the crater was once a martian lake.

"We are looking at rocks right where they formed, rather than downstream or where they got blown by asteroid impacts," Lemmon said. "We've never seen such a thing on another planet from this close."

Opportunity landed in Meridiani Planum, an area consisting of vast plains that contain samples of gray hematite. Scientists are interested in studying the composition of these rocks because gray hematite usually forms in areas where there is liquid water.

"The instruments on (Opportunity) can identify not only the hematite, but also other minerals that will (help) us decide whether water played a role (in the formation of the hematite) or whether the hematite was formed by volcanoes (on the) desert world," Lemmon said.

Spirit and Opportunity each carry five scientific instruments and



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This image is a traverse map, illustrating Spirit's path over the last 45 sols (Martian days). When the rover reached the point called "Laguna Hollow," it had driven 131 meters (430 feet) from Columbia Memorial Station (the landing point). Spirit has already conducted numerous experiments on the surface of Mars using the instruments on its arm: the Moessbauer spectrometer, the alpha particle X-ray spectrometer and the microscopic imager. Spirit is about halfway to the edge of the crater dubbed "Bonneville."

an abrasion tool, according to NASA's Mars Web site. The panoramic cameras on the rovers take pictures of the surrounding terrain in search of water and optimal areas to explore soil and rock samples.

The Miniature Thermal Emission Spectrometer is an instrument on each rover that scans the area around the rover in infrared and determines the types and amounts of minerals on the martian surface, focusing on minerals that usually form near water, according to NASA's Mars Web site.

The Mössbauer Spectrometer on board the rovers locates minerals that contain iron by probing rock and soil samples. According to NASA's Mars Web site, this will help scientists figure out if water aided in the formation of the minerals in the martian rocks and soil.

The Alpha Particle X-ray Spectrometer evaluates rock and soil

samples to determine the concentration of major elements in them. This allows scientists to figure out how the soil and rocks have been altered over time, according to NASA's Mars Web site.

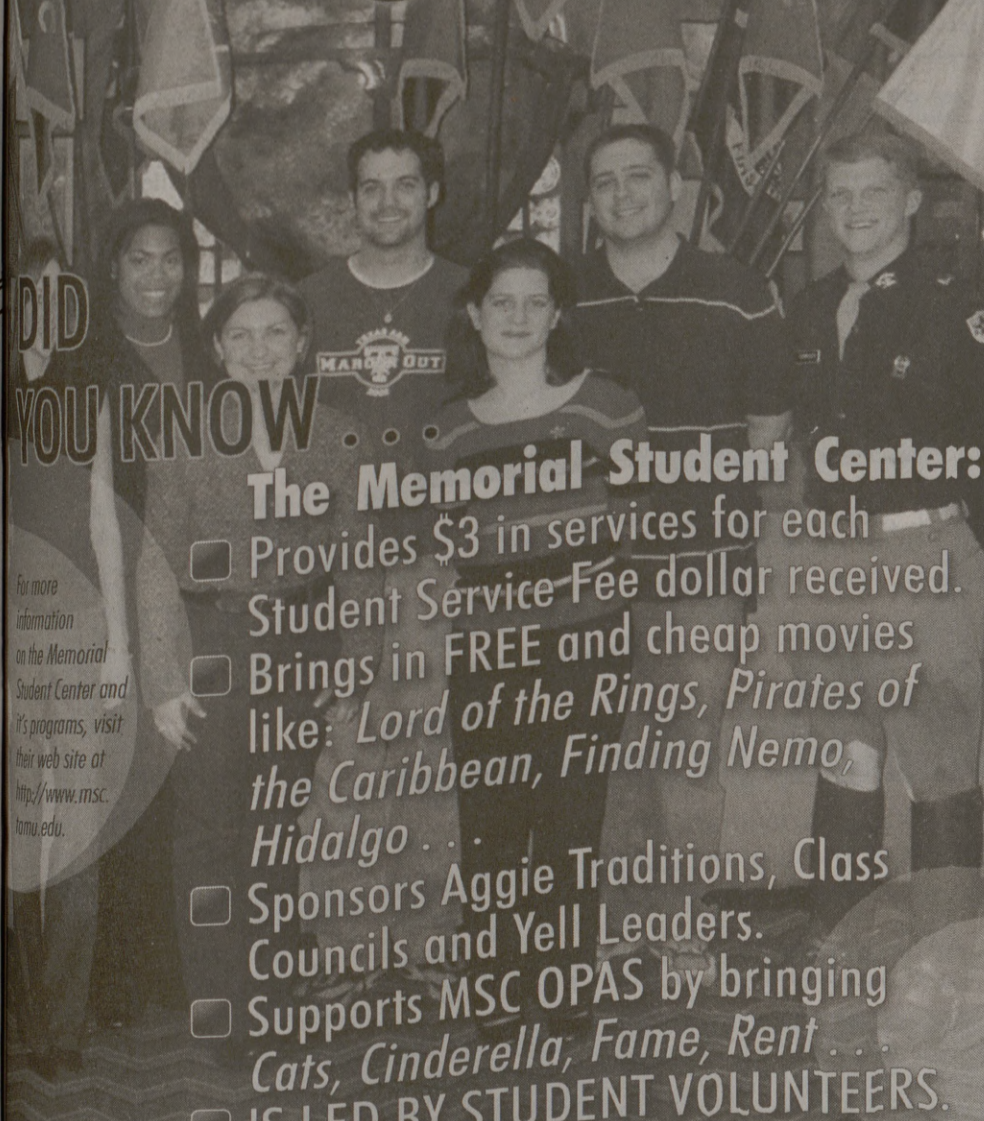
The final instrument on the rovers is the Microscopic Imager that examines the minute details on rock and soil samples to determine how they were formed.

The rock abrasion tool on the arm of the rovers is what grinds away the surface of the rocks on the martian surface to expose their interiors so scientists can study them, according to NASA.

NASA scientists, such as Lemmon, strive to utilize every minute of sunlight on Mars. The rovers are powered by the sun, so the

See Rover on page 4

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