# Venus: Still a Feature Attraction

Although last week's most conspicuous space-related activity was clearly the preparations for the space shuttle's second launching from its Florida pad, nearly 300 scientists in Palo Alto, Calif., had their attention firmly fixed on the planet Venus. Assembled for an international conference on the Venus environment, they shared the results of research being conducted in the United States, France, Germany, Israel, Italy and elsewhere. Even the Soviet Union was on the schedule, and although none of the listed Soviet participants showed up (leaving a few of their reports to be sketchily presented thanks to contacts by American colleagues), there was a clear sign of the continuing Soviet interest in the still-mysterious planet.

On Oct. 30, only two days before the conference began, the Soviet Venera 13 spacecraft was launched toward Venus, followed on Nov. 4 by Venera 14. Each carries a landing craft for analysis of the surface, and although there have been half a dozen Soviet Venus landings in the past, the newcomers are believed to offer the chance of a major scientific advance in the study of the planet. Each lander is said to be equipped with an X-ray fluorescence spectrometer, potentially capable of telling for the first time what the rocks of Venus are made of. Gamma-ray spectroscopy has been used on previous Venera landers to measure trace concentrations of radioactive uranium, thorium and potassium. But the X-ray technique, says Harold Masursky of the U.S. Geological Survey, could expand knowledge of Venus to include the beginnings of "major-element chemistry."

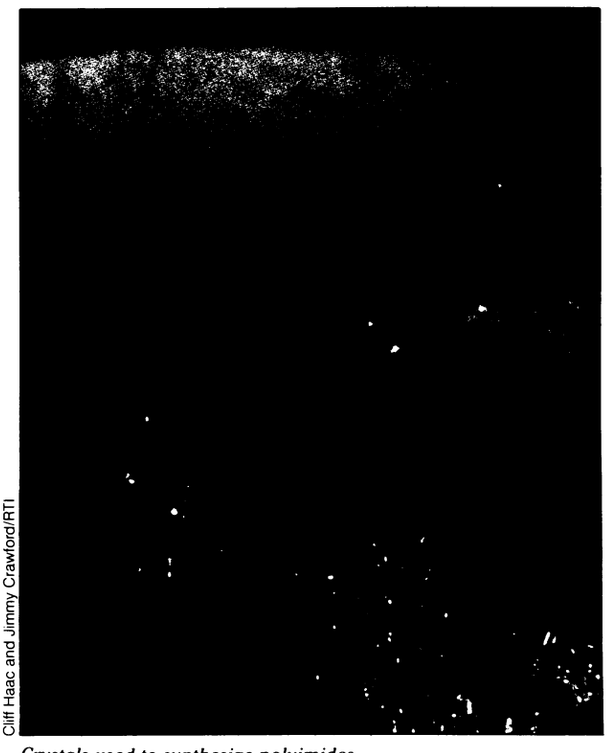
It would also mean that the Venera designers have advanced to the point of attempting to gather the first samples of Venusian surface material (the gamma-ray studies were conducted by placing an instrument in contact with the surface, rather than digging up a sample). Remote-control sampling has been carried out on both the moon and Mars, but on Venus it must be done at temperatures of some 750K (891°F) and an atmospheric surface pressure 90 times that of earth. The plan, says Masursky, appears to involve collecting the samples with a propeller-like drill on each lander, then drawing the samples inside the lander bodies and sealing them up so that the analyses can be conducted in earth-normal temperature and pressure.

Veneras 13 and 14, Masursky adds, will also be the first of their kind to be sent to landing sites chosen for scientific reasons, rather than simply to be within range of the one Soviet deep-space tracking station. In mid-October, U.S. and Soviet scientists met at a regular gathering of a planetary data-exchange group that exists between the two nations. There, the Soviet scientists were given the latest version of the global topographic map compiled from the radar data of the U.S. Pioneer Venus orbiter. Using the map as a guide, Venera flight controllers will fine-tune the descent paths of the landing craft, aiming for the probes to touch down on two particularly interesting parts of the planet. Both will be aimed southeast of an area known as Beta Regio, believed by some researchers to be among the youngest sections of the Venus surface and the most likely to be volcanically active. One lander is to be targeted for a lowland area, expected to represent particularly young crustal material. The other is to head for the nearby rolling uplands, which may be either an old portion of the crust, offering a good contrast with the other site, or a place where the crust is topped with an accumulation of more recent volcanic material. "Either way," says Masursky, "we learn something valuable."

The landers are also believed to carry improved camera systems (Veneras 9 and 10 in 1975 took what are still the only two photos ever made of the planet's surface) as well as other instruments. But even more elaborate plans are in store for a Soviet mission that will send two spacecraft to Venus in 1984 or 1985, drop off a pair of landers and continue on to fly past comet Halley. A host of improvements over past Soviet planetary projects are planned for the mission, including charge-coupled device imaging, movable scan platforms for some of the instruments, higher data-transmission rates, gravitational "slingshot" trajectories and more (SN: 4/11/81, p. 228).

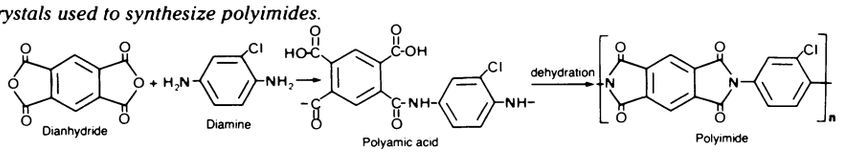
The only U.S. Venus mission being considered in the present budgetary wrangle is the Venus Orbiting Imaging Radar, designed to offer high-resolution, synthetic-aperture radar maps of the whole planet. Its future at this point is uncertain. Some sources believe, however, that there may be Soviet plans to send a synthetic-aperture radar mission to Venus about 19 months before the Venus/Halley launches. Soviet tracking limitations indicate that it might be able to cover only a tiny portion of the planet, and there is disagreement about whether it is really in the works. But for both U.S. and Soviet researchers, the "veiled lady" is still clearly an object of fascination. □

# The polyimides: Pollutant-picking polymers



Cliff Haac and Jimmy Crawford/RTI

*Crystals used to synthesize polyimides.*




The safety engineer walks through a factory with a polymer-filled cartridge. As a known volume of air is sucked through the cartridge, the polymer adsorbs pollutants that later will be identified and measured to determine whether health risks lurk in the workplace atmosphere. Clearly, the safety engineer depends on the pollutant-grabbing ability of the cartridge polymer.

Chances are that the safety engineer depends on the polymer trademarked "Tenax," a product of the Netherlands-based Enka company. But scientists at Research Triangle Institute (RTI) in North Carolina say that while this widely used pollutant adsorber is the best available on



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