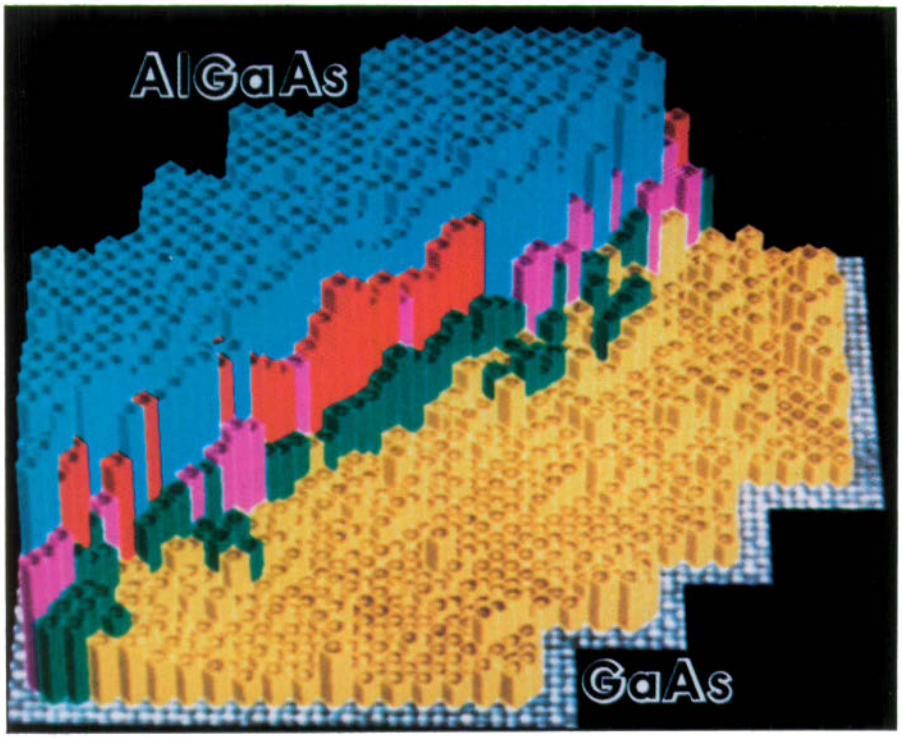


## ERRATA

Figure 5 from the article on "Chemical Interfaces: Structure, Properties, and Relaxation" by A. Ourmazd should have been printed in color on p. 61 of the September 1990 issue of the *MRS BULLETIN*. The color figure to the left can be cut from the current issue and pasted over the appropriate area on p. 61 of the September 1990 issue.

This figure is a three-dimensional representation of the analyzed lattice image of $Al_{0.37}Ga_{0.63}As$ grown on GaAs after a 2-min interruption. The unit cells are 2.8 Å squares. The height of a unit cell represents its composition, and the color changes represent statistically significant changes in composition over and above random alloy statistics.



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### Chemical Process Removes Strontium-90 from Nuclear Waste

Argonne National Laboratory scientists who have developed a chemical process for removing strontium-90 from liquid nuclear waste say it can reduce the amount of strontium more than 100,000 times.

The SREX (pronounced "si-rex") process, for strontium extraction, uses a combination of chemical extractant and solvent that will extract only strontium-90 from dissolved nuclear waste. The extractant is a form of "crown ether," so-called because its molecular structure resembles a royal crown. The solvent is octanol, a chemical used in the perfume industry.

Strontium-90, which enters the food supply with relative ease, was a major contaminant following the Chernobyl explosion in the Soviet Union. Phillip Horwitz, who headed the team that developed the SREX process, said it was particularly important to remove strontium-90 from nuclear waste before burial because the isotope also generates a great deal of heat as it decays, and this heat buildup complicates the problem for the remaining waste. Presently proposed regulations call for liquid nuclear waste to be mixed with other ingredients and fused into glass for deep burial.

The strontium recovered by the process is chemically pure and can be sold. It has a commercial use in radioisotopic thermal generators (RTGs), which are used as power sources for locations that must go unattended for long periods, such as harbor markers.

### New Solar Concentrator Demonstrates High Efficiency

Researchers at Sandia National Laboratories and Solar Kinetics, Inc., a Dallas-based corporation, have developed a parabolic-dish-shaped solar concentrator that differs considerably from other parabolic collectors. The single-facet dish uses a very thin metal membrane in place of the traditional glass mirrors. By alternately applying hydraulic pressure and vacuum during the fabrication process, the membrane is given a curved shape, and then covered with a shiny polymer film to form the reflective surface. Less expensive than glass, the steel membrane also weighs far less. Consequently, it does not need as sturdy a base, a factor that would help keep costs down in a complete system.

Tests of the stretched-membrane parabolic dish show that it is highly efficient and holds promise as a lighter, more economical component of solar thermal systems than other designs. During calorimeter testing, the seven-meter diameter dish achieved peak power of 21.2 kW and peak concentration of 5,400 suns.

The first step in fabricating the stretched-membrane dish involved stretching and fastening a sheet of stainless steel four mils thick on a circular forming ring. A combination of hydraulic pressure and vacuum was used to permanently deform the sheet into a parabolic shape. Measurements were taken after each application of load to determine the next step in the process.

The challenge was to reproduce a parabolic shape as accurately as possible so that sunlight could be concentrated onto a receiver with precision to obtain the maximum possible solar energy, said engineer Tom Mancini of Sandia's Solar Thermal Collector Technology Division. Measurements have shown the dish to have 3.6 milliradians slope error, meaning that its slope