

## *ETHYL LACTATE SOLVENTS: Low-Cost and Environmentally Friendly*

Millions of pounds of toxic industrial solvents could be replaced by environmentally friendly solvents made with ethyl lactate, thanks to a new cost-cutting manufacturing process developed by researchers from Argonne's Energy Systems Division. This innovative technology was the winner in the Environment category of the 1998 Discover Magazine Awards, and won a 1998 Presidential Challenge Green Chemistry Award.

Unlike other solvents, which can damage the ozone layer or pollute groundwater, ethyl lactate is so benign that the U.S. Food and Drug Administration approved its use in food products long ago. Although ethyl lactate has been around for years, the cost of producing it has been too high to allow it to compete economically with lower-priced chemical solvents. Ethyl lactate normally sells for \$1.60 to \$2.00 per pound, compared with about 90 cents to \$1.70 per pound for conventional chemical solvents. Argonne's new production technology has shattered the old price barrier. Its developers believe their new process can cut the market price to well below \$1.00 per pound.



The key technology that will significantly reduce the market price is a new patented purification-separation system. It uses a membrane to selectively remove excess water and bring the reaction to nearly 100% completion with higher purity and lower processing costs.

The technology was developed with funding from DOE, Energy Efficiency and Renewable Energy, Office of Industrial Technologies.

### **1998 Discover Award winner**

