Lehigh Team Studies Fat-Based Detergents

A current research project at Lehigh University could shed important light on the United States Department of Agriculture's (USDA) present efforts to develop new, economically-feasible, and mass-produced detergents for future household and industrial uses. The USDA efforts are concerned with detergents made from an animal-fat base instead of presently used compounds.

A. C. Zettlemoyer

The basic research program at Lehigh and at the USDA Eastern Utilization Laboratory in Philadelphia could make a valuable practical contribution towards the improvement of water polution problems. The use of fat-based detergents, called "soft" or "biodegradable" because their residues are broken down by natural biological processes after disposal, could limit the discharge of certain potentially harmful materials into streams, rivers, and coastal waters.

The purpose of the investigation, directed by A. C. Zettlemoyer (1948), professor of chemistry at Lehigh, represents a long-range contribution to knowledge in this highly specialized field.

The Lehigh research team is investigating which of a series of fat-based specimens provided by USDA is the most efficient potential detergent and why. The samples, consisting of the salts of esters of alpha-sulpho fatty acids, were produced from animal fats by the Eastern Utilization Laboratory.

Graphon, a heat-treated carbon block, is a very convenient model "dirt" to use for the estimation of the cleaning ability of the detergents. The cleansing and wetting efficiency is determined both by the number of detergent molecules accumulated or adsorbed by the model dirt and by the strength with which these molecules adsorb on the dirt. The two factors combined establish how much dirt, under controlled and varied conditions, will be washed away by a detergent solution.

By gathering fundamental information on the molecular interactions at the interfaces where air and water surfaces or water and solid surfaces come into contact, the Lehigh chemists are able to measure adsorption characteristics and relate the chemical structure of the various samples with their behavior as detergents.

Dr. Zettlemoyer is being assisted in the project by K. S. Narayan, research associate in chemistry; E. A. Boucher, research associate in chemistry; and B. J. Lippert, research assistant in physical chemistry at Lehigh.

Dr. Zettlemoyer is the winner of the Bond Award Gold Medal in 1962 for his original work entitled, "The Adsorption of Calcium Ions to Surfactant Films on Graphon," published in *JAOCS*, June, 1962.

1965 International Chemical Exhibition Opens in Paris

From April 21st to May 2nd, Paris will be host to over 300,000 individuals attending two major events in the field of chemistry: The 7th International Chemical Exhibition, and The International Conference of Chemical Arts.

The meetings will open with an address on the economical aspects of the chemical industry, and over 2,500 specialists will take part in the comprehensive program. Among the topics to be discussed are Paints and Varnishes, Chemistry and Agriculture, and Chemistry of Fats.