Session 1
Thermal, Chemical, and Biological Processing

Introduction to Session 1

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Progress in the characterization and development of a number of important processes is presented. The bioremediation of contaminated soils has taken on great importance with the establishment of the superfund sites. The use of a differential-flow reactor to characterize the degradation by mixed microbial cultures of polyaromatic hydrocarbons in soils, such as those found near manufacturers' gas plants (presented in the first paper), should allow the design of bioremediation practices to be based on a more rigorous basis.

Activated carbon is one of the more valuable products that can be made from biomass. The effect of heating rate on yield and quality is presented in the second paper. Activated carbon of higher quality is formed at the higher heating rate; gaseous byproducts are used for process energy.

The control of anaerobic digesters is difficult because the proper control action depends on the feed composition (which *is not* available on-line) and not simply on the methane production rate (which *is* available on-line). Paper No. 3 presents a solution to this problem by basing the selection of the control algorithm on the response to previous controller action.

The effect of temperature on the solvolysis of a single lignocellulose wafer by hydrogen fluoride is reported. Glucose yields as high as 94% were obtained after a posthydrolysis. In the final paper, the virtues of the ammonia freeze explosion pretreatment process are explained. New developments in the ammonia recycle system have lowered the costs to approx 1.5 cents/lb.

In conclusion, a number of advances in biomass-producing techniques, which could be of benefit in many areas of biological, as well as chemical, conversion, are reported.