Non-Gradient Reactors for Investigation of Kinetics of Heterogeneous Catalytic Processes

By G. P. KORNEYCHOOK
L. V. Peesarjevskii Institute of Physical Chemistry of the Academy of Sciences of Ukrainian S.S.R.

Recommend two types of non-gradient reactors with improved heat transfer characteristics: (1) Reactors equipped with piston-type turbolizer, and (2) Reactors equipped with plunger-type recycle pumps. The improvement in heat-transfer attained is due to improved catalyst distribution in the reactor draw-off duct and the more effective arrangement of the reactor within the heat-abstracting media.

Non-Gradient Methods to Study Kinetics of Liquid Phase Heterogeneous Catalytic Processes

By S. L. KEEPERMAN
N. D. Zeleenskii Institute of Organic Chemistry of the Academy of Sciences of U.S.S.R.

Discuss usefulness of non-gradient techniques for study of kinetics of heterogeneous catalytic reactions and for evaluation of catalysts in liquid phase reaction systems.

Recycle-Continuous Technique for Study of Kinetics of High Pressure Heterogeneous Catalytic Reactions

By I. P. SEEDOROV, D. B. KAZARNOVSKAYA AND P. P. ANDREYEECHEV
State Scientific Research Institute for Nitrogen Industry

Give a description of a recycle-continuous system—requiring no mechanical recycling equipment—for evaluation of catalysts and reaction kinetics at high pressures. Recirculation is effected by a thermo-syphon technique.

Recycle-Flow Catalytic Unit

By G. I. LEEVY AND V. E. VASSERBERG
N. D. Zeleenskii Institute of Organic Chemistry of the Academy of Sciences of U.S.S.R.

Describe an improved version of a recycle-flow unit which is suitable for evaluation of catalytic activity at both the near-quasi-static conditions and the recycle-continuous conditions, with simultaneous continuous draw-off of not only the gaseous products but also of the separating heavier reaction products.

Catalysts and Catalytic Reactions in Chromatographic Processes

By S. Z. ROGEENSKII, M. I. YANOVSKII AND G. A. GAZEEYEV
Institute of Chemical Physics of the Academy of Sciences of U.S.S.R.

Describe basic laws governing catalytic reactions in chromatographic processes. Using dehydrogenation of cyclohexane to benzene over a platinum catalyst as an example, show that at specified conditions chromatographic processes are more attractive, giving product yields which are higher than the equilibrium. Present a comparison between the experimental results from a chromatographic unit and from a unit operating at usual dynamic conditions.

Present the results of a radio-chromatographic technique used to study catalyst performance during initial in-service period.

Kinetic Analysis of Chemical Interaction of Gases with Solids in a Fluidized Bed

By A. L. ROSENTAL
The Institute of Petrochemical Synthesis of the Academy of Sciences of U.S.S.R.

Present a method to calculate the kinetics of chemical interaction of gases with solids in a "boiling" bed inside a model reactor. The calculation involves an equation for kinetics of the process as applied to a single particle and the equations to describe the flow of the particles and of the gas in the bed.

Examine possible methods to investigate topochemical and catalytic reactions when the composition of a gas in contact with the particles changes rapidly.

Evaluation of Catalytic Activity in Commercial Fluid Cracking Units Equipped with Catalyst Recycling Systems

By V. S. ALEEYEV, S. A. YEFEEMOVA, A. P. KASEEMOVA AND B. G. TER-SARKEESOV
The Institute for Petrochemical Processes of the Academy of Sciences of Azierbaidjan S.S.R.

Suggest a laboratory method for evaluation of activity of powdered catalysts in fluidized ("boiling") bed cracking of a vaporized reference feed under standardized conditions. Superficial linear velocity of the vaporized feed in the reactor is held at 0.06 m/sec.

For evaluation of a chromia-alumina dehydrogenation catalyst recommend operation with