

solves the trivalent iron molybdate. A method of phase analysis is proposed for the iron-molybdenum catalysts which are composed of Fe_2O_3 , $\text{Fe}_2(\text{MoO}_4)_3$, and MoO_3 .

Tables and Graphs for Determination of Optimum Yields of Primary Products in Series—Parallel Reactions

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The author demonstrates that in the series-parallel reactions of the second order the optimum yield of the primary product, $x_{1,m}$, and the corresponding quantity of the unreacted feed, $x_{0,m}$, are defined by the mutually interchangeable functions of the direct ratio, α , of the reaction rate constants, k_2 and k_1 (i.e., $\alpha = k_2/k_1$) and of the corresponding inverse ratio, r (i.e., $r = 1/\alpha$), so that:

$$x_{1,m} = \alpha \frac{1}{1-\alpha} = r \frac{1}{1-r};$$

and

$$x_{0,m} = \alpha \frac{1}{1-\alpha} = r \frac{1}{1-r}$$

The tables of values of $x_{1,m}$ and $x_{0,m}$, corresponding to the listed values of the arguments α and r , are accurate to the fourth decimal place, when the α values (and those of the corresponding r 's) are shown to be accurate to the second decimal place. The plots of $x_{1,m}$ and $x_{0,m}$ as functions of α (and, therefore, also of r) are shown for the α values of 0 to 1.

Improved Non-Gradient Reactors Equipped With a Plunger-Type Turboagitator for Study of Kinetics of Heterogeneous Catalytic Reactions

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A novel version of non-gradient reactors equipped with a plunger-type turboagitator is described. This differs in design from that described earlier in that the catalyst-holding chamber in the new version is located in the lower section of the reactor, underneath the plunger of the turboagitator. This alteration in the reactor design makes possible evaluation of performance of physically-weak granular catalysts. The reactor of the earlier design and the improvements proposed in the new version are described in detail and typical dimensions of the reactor components are

listed. The cases are cited where the novel reactor could be suitably employed.

A Reactor of Novel Design for EPR Studies of Reactions in Gaseous Phase

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A reaction vessel of novel construction is described for use in EPR investigations of rarefied flames. The vessel of the new design is operable at significantly lower flame pressures and, as a result, produces line spectra with improved resolution characteristics. The special method of heating the reactor ensures production of the flame within the spectrometer resonance zone coincident to registering of the EPR signals, which are due to the magnetic and electronic dipole-dipole induced transitions.

LETTER TO THE EDITOR

EPR Signal Due to CrCl_3 on a Carrier

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It is known that with CrCl_3 the shape of the narrow EPR line of Lorentzian mode is due to the exchange interaction of the Cr^{+3} ions via the Cl^- ion. To determine if the width and shape of the EPR signal due to small concentrations of CrCl_3 in an inert carrier would be identical with that for the "pure" CrCl_3 , a sample of CrCl_3 (2% by wt) on $\gamma\text{-Al}_2\text{O}_3$ support was prepared and analyzed. The method of preparation comprised soaking $\gamma\text{-Al}_2\text{O}_3$ in an aqueous solution of $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$, followed by drying the soaked material at a room temperature and by subsequent heating in a stream of CCl_4 at a temperature of 350° —to convert the added $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$ into anhydrous CrCl_3 .

The EPR spectrum of the supported catalyst—as obtained in Spectrometer RE 13-01 at μ of 9326 M hertz—is a narrow line, with ΔH of $74 \pm 2 e$ and g of 1.98 ± 0.01 . The EPR spectrum of pure CrCl_3 has identical parameters. Analysis of the EPR spectrum of the supported CrCl_3 by the method of linear anamorphism shows that the line retains Lorentzian shape at its center but assumes Gaussian shape at the extremities. Thus, the analysis shows that the exchange interaction also takes place in the case of the supported CrCl_3 —although, due to the effect of the support, the interaction is not as great as with the pure CrCl_3 .