

Adsorption Methods for Determination of Specific Surface and Pore Structure of Catalysts

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Review various adsorption methods to determine specific surface and pore structure of simple and complex catalysts. Summarize the results of critical evaluation of the conditions valid for Brunauer, Emmett and Teller's method to determine surface areas of solids. Emphasize that the choice of the adsorbate for these determinations must be based on sound reasons, including the consideration of its molecular surface area in the monolayer at a catalyst surface. Present a tabulation of the surface area values for the adsorbates used in this study.

Also investigated was the structure of the pores in corpuscular-type catalysts.

Describe preferred types of adsorption units for determination of specific surface and pore structure.

Rapid but Simple Methods for Determination of Catalyst Surface Areas

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In this report give a general description of the equipment and principles of the two methods for

determination of catalyst surface areas. Also report on own experience in using these two methods.

Methods to Account for Distorting Effects of Macrofactors in Determining Catalytic Activity

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The data from catalytic activity evaluations which do not take into account the effect of the macrofactors are of no value both from the theoretical and practical standpoints.

Describe various distorting effects due to neglect of the macrofactors and suggest procedures to account for and to eliminate such distortions.

Modeling a Process for Reacting Carbon Monoxide with Steam

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Using the carbon monoxide-steam reaction over a commercial iron-chromium catalyst as an example, describe an experimental procedure to obtain the data essential for construction of a mathematical model of the process. The data so obtained enable correlation by calculation of the extent of conversion with catalyst bed height in commercial units.