

smaller phosphine (vi) rapidly dimerises to give (iii). From NMR and hydrogen evolution studies, the value of  $x$  seems to be six, in which case (vi) is a unique example of heptavalent iridium. Treatment of (vi) with  $\text{NEt}_3$  gives the known (15) complexes  $\text{IrH}_5\text{L}_2$ .

Iridium therefore seems to be an element whose catalytic potential has yet to be fully realised. Given the right conditions, in

particular, co-ordinative unsaturation, iridium can provide catalysts as active as those of any other element.

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## Commercial Catalytic Processes

**Handbook of Catalyst Manufacture** BY MARSHALL SITTING,

Noyes Data Corporation, Park Ridge, New Jersey, 1978, 474 pages, \$48

This book gives an account of 417 patents issued in the United States since 1974 that deal with catalysts and their commercial technology. The contents comprise chapters on general topics (with useful information on catalytic reactors), alkylation, ammoxidation, aromatisation, cracking, dehydrogenation, disproportionation (metathesis), isomerisation, oligomerisation, oxidation, hydroformylation, reforming, steam reforming and methanation. There is also a lengthy section on hydrogen processing, as befits recent and current interest in this subject.

The book delivers both more and less than the title promises: more in the sense that subjects other than catalyst manufacture are discussed (especially reactor design and construction), less in the sense that no overview

of the methods and problems of catalyst manufacture is provided, and thus in no real sense is it a handbook. Anyone aspiring to make a good catalyst solely with the information provided in this book would be well advised not to start. The book has all the defects of its congener, also recently reviewed in this journal (*Platinum Metals Rev.*, 1978, 22, (1), 24): most sadly lacking is a subject index, without which any search for a specific piece of information tends to be rather a hit-or-miss affair. Since the work is classified on the basis of the process rather than the catalyst, it is more a handbook on catalysed processes than of catalyst manufacture. It will therefore be more useful to those who are strictly process-oriented than to those whose horizons are wider. G. C. B.