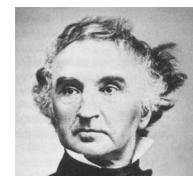


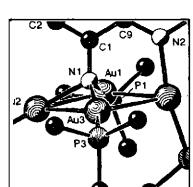
# Chemical Society Reviews

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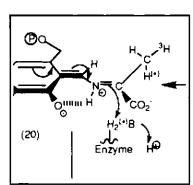
## Justus von Liebig. Gatekeeper of Chemistry By William H. Brock (pp. 383-390)

This historical article reviews the career of the German chemist Justus von Liebig (1803-73), and pays particular attention to his intimate relations with Great Britain. Besides contributing to organic chemistry, Liebig was important for his role as a chemical teacher and statesman of science. Liebig is interpreted as a gatekeeper who saw the central significance of chemistry for other sciences, and of chemists to modern industrial societies.



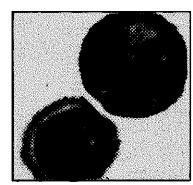
## LUDWIG MOND LECTURE. High-carat Gold Compounds By Hubert Schmidbaur (pp. 391-400)

The clustering of mono-coordinate gold(I) cations of the type  $LAu^+$  at Main Group Element nucleation centres leads to a wide variety of aggregates with novel stoichiometries and molecular structures. The unexpected hyper-coordination at boron, carbon, nitrogen, oxygen, phosphorus and sulfur frequently observed in these species is rationalized on the basis of significant Au-Au bonding (auriphilicity), which also gives rise to a supramolecular chemistry of simple mono-nuclear two-coordinate gold(I) complexes.



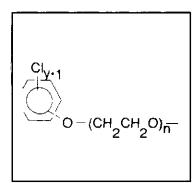
## Chemistry and Neurochemistry of the Kynurenone Pathway of Tryptophan Metabolism By Nigel P. Botting (pp. 401-412)

The kynurenone pathway of tryptophan metabolism is currently of considerable interest due to biological activities of various kynurenone metabolites. The most important appears to be quinolinic acid, which has been implicated as an etiological factor in a range of neurodegenerative diseases. The enzymes on the pathway are also mechanistically interesting and have some unusual features. This review describes the pathway, discusses the mechanisms of the enzymes involved and examines the strategies that have been employed for inhibitor design.



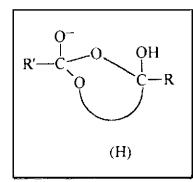
## Polymer-immobilized Carbohydrate Ligands: Versatile Chemical Tools for Biochemistry and Medical Sciences By N. V. Bovin and H.-J. Gabius (pp. 413-422)

Protein-carbohydrate interactions are involved in diverse physiological processes from fertilization onwards. Preparation of tailor-made carbohydrate ligands is a first step to detect sugar receptors such as lectins in extracts, blots, in cells and tissues, to quantify their expression, to analyse their specificity, and to block their binding to ligands *in vitro* and *in vivo*. To turn oligosaccharides into multi-purpose tools with high avidity, their chemical immobilization to a synthetic polymeric backbone is performed. The resulting neoglycoconjugates can then be conveniently labelled, if required. This procedure combines chemical design with biochemical/biomedical applications in order to devise new strategies for e.g. cancer diagnosis and therapy.



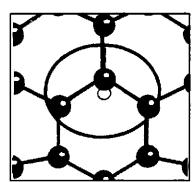
## Disposal Methods for Chlorinated Aromatic Waste By M. L. Hitchman, R. A. Spackman, N. C. Ross and C. Agra (pp. 423-430)

The fate of chlorinated aromatic waste is significant because many of the active ingredients are toxic, highly persistent and may bioaccumulate to harmful levels. This review discusses the importance of clean technologies for treating existing contaminated sites and for minimising the release of more waste into the environment. The feasibility of each method for effectively detoxifying chlorinated aromatic compounds is evaluated, considering the legal as well as the technological issues affecting their development.



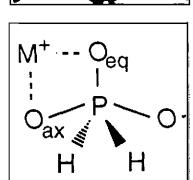
## Intramolecular Catalysis: Carbonyl Groups in Ester Hydrolysis By Keith Bowden (pp. 431-436)

Intramolecular catalysis of ester hydrolysis by proximate carbonyl groups is described. A brief account of the hydration of aldehydes and ketones, as well as the acidity of the hydrates, is given. Carboxylate ester hydrolysis catalysed by such hydrates can occur by an endocyclic or exocyclic route, for which a number of criteria are delineated; *i.e.* rate enhancements, substituent effects, activation parameters and isotopic labelling studies. Recent studies of phosphate and phosphonate hydrolysis and model systems for esterases demonstrate the importance of such catalysis.



## Aspects of Muonium Chemistry By Tom A. Claxton (pp. 437-448)

A review is presented of some of the recent experimental results from muonium chemistry which have been studied theoretically. Attention is focussed on the potential energy hypersurface of a molecule and how the very light muon particle probes this much more extensively than the corresponding proton derivative. Areas discussed include kinetic as well as thermodynamic effects.



## Alkali-metal Ion Catalysis and Inhibition in Nucleophilic Displacement Reactions of Phosphorus-, Sulfur- and Carbon-based Esters By M. J. Pregel, E. J. Dunn, R. Nagelkerke, G. R. J. Thatcher and E. Buncel (pp. 449-456)

Interesting and varied metal-ion effects were observed in the reaction of ethoxide ion with a series of carbon-, phosphorus-, and sulfur-based esters. Catalysis and inhibition were analysed in terms of ground-state and transition-state stabilization, leading to insight into the differential role of metal-ion solvation in the transition state. The results are discussed with reference to the Eisenman theory of ion-exchange selectivity and to *ab initio* studies of transition-state stabilization.

**Articles that will appear in forthcoming issues include**

Probing the Intermolecular Potential: Spectroscopy or Molecular Beam Scattering **A. J. McCaffrey**

Structure and Mode of Action of the Cofactor of the Oxomolybdoenzymes **D. Collison, C. D. Garner and J. A. Joule**

The Chemistry of Oxoalkoxides of Metals **R. C. Mehrotra**

The Nitro Group as a Substituent **Otto Exner and Tadeusz Marek Krygowski**

A Strategy for Constructing Photosynthetic Models **Anthony Harriman and Jean-Pierre Sauvage**

Surface Chemistry of Titania and Titania-supported Catalysts **Konstantin I. Hadjiivanov and Dimitar G. Klissurski**

Calixarene-based Chemical Sensing Agents **M. Anthony McKervey and Dermot Diamond**

The Excited State in Atmospheric Chemistry **G. Marston**

Man and the Elements of Groups 3 and 13 **John Burgess**

Infrared FT Emission Spectroscopy **Peter F. Bernath**

Nitric Oxide in Biology: Its Role as a Ligand **R. J. P. Williams**

Asymmetric Synthesis of  $\beta$ -Amino Acids and  $\alpha$ -substituted  $\beta$ -Amino Acids **Guiliana Cardillo and Claudia Tomasini**