

the computational and experimental techniques used in studying molecular interactions.

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**Advanced Practical Inorganic and Metalorganic Chemistry**

R. J. Errington

Blackie Academic and Professional, 1997

xii + 288 pages. Soft cover £24.99

ISBN 0-7514-0225-7

This eminently readable book has been written to bridge the cultural gap for students moving from carrying out synthetic chemistry in a teaching environment to performing preparative chemistry in a research environment. The emphasis is on the handling of air-sensitive compounds, although methods for the characterization of compounds are covered briefly in later chapters.

Important preliminaries for the new research student, such as searching and keeping up to date with the chemical literature, and the maintenance and content of laboratory notebooks, are prominently featured in the introductory chapter.

The use of Schlenk lines, glove boxes and high-vacuum lines is comprehensively covered. For example, in the chapter devoted to Schlenk techniques we are taken through a discussion of aspects of the design and setting up of an inert-gas/vacuum manifold, to considerations of the inert-gas supply and purification columns, and finally to a description of filtration techniques using Schlenk apparatus.

Having considered the apparatus to be used in our experiments the author then moves on to discuss the solvents and reagents which might be employed. There is much useful information collected here on the purification and drying of solvents (including the design and maintenance of solvent stills). The section on reagents is by its very nature somewhat general. Nevertheless the author provides a host of useful ideas for carrying out halogenation, ligand metathesis, alkylation, oxidation, reduction and deprotonation reactions.

By this stage we are ready to carry out a reaction! Focusing on air-sensitive materials, the author discusses techniques for the measurement of quantities of reagent and their introduction to the reaction vessel, and for heating and mixing the reaction mixture. Subsequently of course the products must be worked up, isolated and purified and the ways in which this can be achieved are quite thoroughly described. There is also a useful discussion at this point of the long-term storage of sensitive materials in ampoules. The growing importance of the reactions of solids is recognized by the author and discussed here in two short chapters.

Characterization of products now follows, the emphasis being on the preparation of samples for measurement,

rather than the theory of particular techniques, as is appropriate to the general thrust of the text.

Special techniques such as microwave heating, metal vapour synthesis and sonication are treated briefly in the penultimate chapter and the book concludes with short descriptions of preparative methods for selected compounds, which largely reflect the author's own research interests.

In conclusion, the text is lucid and is supplemented by many clear line drawings of apparatus. The book will be of interest to anyone embarking on a career in preparative chemistry and should also provide more experienced researchers with new ideas on how to carry out their synthetic studies.

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**Edward Frankland: Chemistry, Controversy and Conspiracy in Victorian England**

C. A. Russell

Cambridge University Press, Cambridge, 1996

xx + 535 pages. £65.00, 110.00

ISBN 0-521-49636-5

All cultures need their heroes, and organometallic chemistry has an excellent one in Edward Frankland. In the past he has been undersung but, with this scholarly researched and referenced biography by Colin Russell, Frankland should now receive the recognition he deserves.

He was born in Churchtown, near Lancaster, in 1825, the illegitimate son of Edward Gorst Jr and Margaret Frankland, who was a servant in the home of Edward Gorst Sr, a prominent lawyer in Preston. Soon afterwards, his mother married William Helm, and Frankland lived in Lancaster with his stepfather and mother, who took in lodgers for a living. He never gave interviews, and though his own recollections were published in 1901 as *Sketches from the Life of Sir Edward Frankland*, this was rapidly withdrawn before reappearing in an expurgated edition. The secret of his origins was suppressed, and this may have influenced the fact that neither the Royal Society nor the Chemical Society published an obituary when he died in 1899.

Colin Russell and his wife Shirley very fortunately came across a collection of several thousand documents in the hands of Frankland's descendants. Microfilm copies of these papers have been deposited in the Open University Library, and it is largely on these papers that the present book is based.

After a rudimentary education at eight different schools, Frankland was apprenticed for six years to a pharmacist's shop in Lancaster; then in 1845, on recommendation of a medical friend, he moved to London to be assistant in analytical chemistry to Lyon Playfair of the Geological Survey. Here he met Kolbe, who was to be a life-long friend. He attended Playfair's