

**Laboratory Introduction
to
Bio-inorganic Chemistry**

Laboratory Introduction to Bio-inorganic Chemistry

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Preface

Within the last 20 years there have been many advances in our understanding of the role of elements *in vivo*. Such achievements arise from painstaking researches in many disciplines—biochemistry, inorganic reaction mechanisms, medicine, pharmacology—to mention but a few. The need to supply a steady stream of researchers has been reflected in a demand for bio-inorganic courses at undergraduate level. This trend has been supplemented with a wide range of service courses for medical students and applied biologists. Several textbooks have been published and there is a clear need to reinforce lecture and textbook instruction with laboratory training and experience. This book is a laboratory manual which collects experiments that may be used to drive home the principles of bio-inorganic chemistry.

Readers who expect to find experiments in which, for example, metal salts are administered to an animal and then some sophisticated scheme of reaction mechanism is derived, will be disappointed! Many of these experiments are fundamental to inorganic chemistry or pharmacology but they have now been adapted to consider either biological material or the presence of metals. The relationships between such experiments and bio-inorganic principles are indicated in the Introductions but it must be emphasised that the activation energy necessary to turn these experiments into direct educational relevance for each specific lecture course being mounted must, and can only, come from the course instructors.

Since the human body contains about 10^6 different solutions (i.e. solutions entrapped inside living cells) we have arbitrarily classified experiments into analysis of components of a cell, the inorganic chemistry occurring *in vivo* and the metallo-enzyme-metalloprotein chemistry occurring in the micro environments of enzyme

active sites within cells. There could have been many other types of classification since bio-inorganic chemistry is contingent upon so many branches of natural science.

We have procured experiments from many sources and obtained our own experiences before writing them herein. However, we should like to express our thanks particularly to Professor A. G. Splittgerber of Gustavus Adolphus College who is the original developer of Exp.18(a) and (b), Professor W. H. Sawyer of the University of Melbourne (for Exp.18(c)), Dr. Y. Koga of the University of British Columbia (for Exp.6(a)), Dr. J. T. Roos of Marlborough College (for Exp.3-7), Mr. P. M. May of UWIST 9 for Exp.11 and 25), Dr. D. E. Fenton of Sheffield University (Exp.18) and Ms K. Oliver (Exp.21). We should also like to thank Mr. B. Clifford for technical assistance in developing some of the experiments at the University of British Columbia.

We would value receiving ideas from fellow instructors with a view to an improved second edition.

‘We gather a posy of other men’s flowers but the thread which connects them is our own.’

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E.-I.O.
D.R.W.