Preface

This book is aimed at providing a sound introduction to the chemistry of the lanthanides, actinides and transactinides to undergraduate students. I hope that it will also be of value to teachers of these courses. Whilst not being anything resembling a comprehensive monograph, it does attempt to give a factual basis to the area, and the reader can use a fairly comprehensive bibliography to range further.

Since I wrote a previous book in this area (1991), the reader may wonder why on earth I have bothered again. The world of f-block chemistry has moved on. It is one of active and important research, with names like Bünzli, Evans, Ephritikhine, Lappert, Marks and Parker familiar world-wide (I am conscious of names omitted). Not only have several more elements been synthesized (and claims made for others), but lanthanides and their compounds are routinely employed in many areas of synthetic organic chemistry; gadolinium compounds find routine application in MRI scans; and there are other spectroscopic applications, notably in luminescence. Whilst some areas are hardly changed, at this level at least (e.g. actinide magnetism and spectroscopy), a lot more compounds have been described, accounting for the length of the chapters on coordination and organometallic chemistry. I have tried to spell out the energetics of lanthanide chemistry in more detail, whilst I have provided some end-of-chapter questions, of variable difficulty, which may prove useful for tutorials. I have supplied most, but not all, of the answers to these (my answers, which are not always definitive).

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