

Book Review

Systematics and Properties of the Lanthanides. Editor S.P. Sinha, *NATO Advanced Study Institute Series, Series C: Mathematical and Physical Sciences No. 109*, D. Reidel, Dordrecht, The Netherlands, 1983, 648 pp., Cloth 195 Dfl.

This book represents a compilation of lectures from the NATO Advanced Study Institute Summer School, held at Braunlage, Germany, from July 11 to July 25, 1982. The keynote lecture is presented by Wilhelm Klemm, who will be remembered as one of the great pioneers of the study of the physical properties of the lanthanide elements. S.P. Sinha and L. Brewer discuss the systematic variation of the properties of the lanthanides across the periodic table.

The structural chemistry of these elements is represented in lectures by L. Niinisto and G.J. Palenik. Numerous examples and detailed discussion of higher coordination numbers and coordination polyhedra are given. The electronic structures, spectroscopy and magnetic properties of the lanthanides, both in the metallic state and in the coordination complexes are covered in detailed lectures by H.L. Skriver, J. Rossat-Mignod, S. Hüfner, W.T. Carnall, S.P. Sinha, and others. Of interest to the NMR spectroscopist is the lecture by J.R. Ascenso and A.V. Xavier on the use of lanthanide ions as probes of solution structure.

Finally, lectures by J.C. Duchesne and P. Moller cover the use of lanthanide elements as probes of geological processes. Four of the lecturers provide a statement of what they perceive to be the future trends in research on the lanthanide elements. This penultimate chapter makes very stimulating reading. The final chapter is a summary of the posters presented at the summer school.

This book is an interesting, personal, and an in-depth view of lanthanide chemistry by some of the major workers in the field as it stands today. The only area not covered in significant depth is the application of lanthanide elements in products and processes or engineering. The detailed literature citations make the book an excellent starting point for metallurgists, chemists, physicists, and geologists interested in this fascinating row of the periodic table.

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