

Gmelin handbook of inorganic chemistry, 8th edit., *S – Sulfur-Nitrogen Compounds, Part 2: Compounds with Sulfur of Oxidation Number IV*, Springer-Verlag, Berlin, Heidelberg, New York, Tokyo, 1985, xiv + 333 pages, DM 1144, ISBN 3-540-93512-6.

This is the second volume of sulfur (System No. 9) to be devoted to sulfur–nitrogen compounds. The former volume (1977) was devoted to compounds in which the sulfur had a formal oxidation state of +6: the present volume is restricted to sulfur–nitrogen ring compounds in which at least one sulfur atom can be regarded, in a limiting structure, as being in the +4 oxidation state. As well as discussing a more interesting class of compounds, the volume under review also has the supreme advantage of having been written in English! The chapters are arranged, sensibly, according to the size of the sulfur–nitrogen ring. Thus, chapters 1–8 describe compounds of ring size 4–11, whilst the final chapter with a range of fascinating sulfur–nitrogen–transition-metal ring systems. Access to data pertaining to specific compounds is facilitated by two splendid indices, one based upon empirical formulae, the other being a ring index (indeed, it was only upon close examination of the ring index, which includes the “limiting structures” (vide supra), that I realised why some of the compounds were classified as sulfur(IV)).

In detail, the first eight chapters describe the following species:

Ring size	Species
4	S_2N_2 and its complexes
5	$[S_3N_2]^+$, $[S_3N_2]_2^{2+}$, $[S_3N_2]_2N^+$, $[S_3N_2]^{2+}$, S_3N_2O , $S_3N_2=NR$ and $[S_3N_2Cl]^+$
6	S_4N_2 , $[S_3N_3]^+$, $[S_3N_3]^+$, $[S_3N_3]^+$, $[S_3N_3O]^-$, $S_3N_3-N=X$, $S_3N_3(OR)_3$, $[S_3N_3X_2]^+$, $[S_3N_3X_3]$ and its complexes, and S_2N_4 derivatives
7	$[S_4N_3]^+$
8	$[S_4N_4]$ and its complexes, $[S_4N_4]^+$, $[S_4N_4]^{2+}$, $[S_4N_4]^{n-}$, $[S_4N_4H]^+$, $[S_4N_4Cl]^+$, $[S_4N_4X_4]$ $\{X = ON(CF_3)_2, NR_2 \text{ or halide}\}$, $[(OSNH)_4]$, and $[S_4N_4X_4]$
9	$[S_4N_5]^+$, $[S_4N_5]^-$, $[S_4N_5O]^-$, and $S_4N_5-N=X$
10	$[S_5N_5]^+$
11	S_5N_6

The literature is covered up to the end of 1983, and a number of 1984 references are also included. The sulfur–nitrogen chemist has been very well served by X-ray crystallographers, who have revealed the many fascinating structures which these compounds possess, and which are illustrated in an exceptionally clear manner. The relatively simple electronic structures of these compounds have also attracted significant theoretical interest, and this is reflected in the detailed discussion of electronic structure to be found in this volume. The authors (N. Baumann, B. Heibel, J. v. Jouanne, H. Keller-Rudek and A. Kubny) are to be congratulated for adding insight to what so easily have degenerated into a routine catalogue of compounds, and for producing a volume which should be on the shelves of every chemistry library.

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