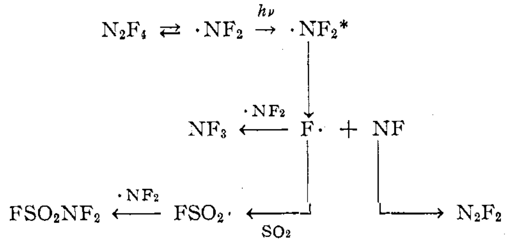
fluoramide, FSO_2NF_2, was formed in 89% yield together with N_2F_2 in 60% yield.[5] In addition small amounts of N_2O, NO, N_2, SiF_4, SOF_2, and SO_2F_2 were obtained.

Sulfuryl fluoride difluoramide was characterized by analysis (Found: N, 9.98, S, 22. 7), its infrared spectrum (bands at 6.72 and 8.0 μ, S=O, 10.0 and 10.87 μ, N–F, and 11.82 μ, S–F), molecular weight (Found: 135.7 mass spectrometrically, 136.2 by vapor density), n.m.r. (resonances at −1668 c.p.s.,[6] NF, and −984 c.p.s., S–F, in ratio of 2:1) and the mass spectrum.

These transformations are rationalized by the scheme



Although the formation of FSO_2NF_2 may be explained by assuming an initial attack on SO_2 by $\cdot NF_2$ with subsequent combination with $\cdot F$ or fluorine atom abstraction from N_2F_4, such a pathway does not seem reasonable in view of the known ability of $\cdot NF_2$ to act as an efficient radical trap.[7] Since SO_2F_2 was observed, but no bis-(difluoramino) derivative, fluorine radicals appear to lead the attack.[8] The scheme shown also may accommodate the observation that difluoramino sulfur pentafluoride is formed by irradiation of SF_4 and N_2F_4.[9]

Further work is in progress on the photochemistry of N_2F_4 and the chemistry of FSO_2NF_2.

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(5) Based on the equation $N_2F_4 + SO_2 \rightarrow FSO_2NF_2 + {}^1/_2\,N_2F_2$.

(6) Referred to external $CFCl_3$. Samples measured neat at −50° using a 40 Mc. probe.

(7) J. P. Freeman, Advances in Chemistry Series, No. 36, American Chemical Society, Washington, D. C., 1962, p. 128.

(8) Also consistent with the present data is a sequence initiated by fluorine atom abstraction by an excited species, $\cdot NF_2{}^*$ or $SO_2{}^*$.

(9) A. L. Logothetis, G. N. Sausen, and R. J. Shozda, *Inorg. Chem.*, **2**, 173 (1963).

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Book Reviews

Handbuch der Präparativen Anorganischen Chemie. Second Edition. Volume I. Edited by GEORG BRAUER. Ferdinand Enke Verlag, Stuttgart W. Hasenbergsteige 3, Germany, 1962. xiii + 884 pp. 15 × 25 cm. Price, DM. 124.

The First Edition of this compilation of inorganic preparations, which was published in a single volume in 1954, soon became a standard reference book for inorganic chemists. The extraordinary output of new inorganic compounds in the very recent past has necessitated the expansion of the Second Edition of this work to two volumes.

Volume I of the second edition contains contributions by 27 authors, each an authority in his field. The format is substantially the same as that of the First Edition. The volume opens with a section entitled "Preparative Methods" (111 pages) which consists of an excellent and fairly comprehensive discussion of the apparatus, materials, and techniques of importance in synthetic inorganic chemistry. This section is followed by 18 chapters dealing with the preparation of the representative elements and many of their compounds. The various chapter titles are: (1) Hydrogen, Deuterium, Water; (2) Hydrogen Peroxide; (3) Fluorine, Hydrogen Fluoride; (4) Fluorine Compounds; (5) Chlorine, Bromine, Iodine; (6) Oxygen, Ozone; (7) Sulfur, Selenium, Tellurium; (8) Nitrogen; (9) Phosphorus; (10) Arsenic, Antimony, Bismuth; (11) Carbon; (12) Silicon, Germanium; (13) Tin, Lead; (14) Boron; (15) Aluminum; (16) Gallium, Indium, Thallium; (17) Alkaline Earth Metals; (18) Alkali Metals.

The 18 chapters listed above include many preparations not found in the corresponding chapters of the First Edition. The nature of these new preparations reflects current research trends. For example, among the new substances found in the chapter on fluorine compounds are FSO_2NO, $PCl_4{\cdot}PF_6$, $(PNF_2)_3$, $(PNF_2)_4$, KPF_6, and ClF_3. In addition, an attempt has been made to incorporate newer and better methods for compounds included in the original edition, and compounds whose existence has been disproved, *e.g.*, OsF_8, have been deleted.

At the end of each preparation properties of the substance prepared and pertinent literature references are cited. To the reviewer, these lists of references appear to be comprehensive and up to date.

The directions for the various syntheses are, on the whole, given in a clear concise manner, and numerous (278) illustrations of apparatus are to be found. It is to be regretted, however, that actual quantities of reagents employed and yields of product obtained are not given in every instance.

A question will arise as to the reproducibility of the preparations described. On this point the reviewer can only cite his translation of the Editor's statement in the Preface to the effect that the preparations have been newly tested either in the laboratories of the authors or by exchange of experiences in different laboratories, and thus may be considered as reliably reproducible.

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