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ON NEW PATHWAYS IN THE SYNTHESIS OF METAL FLUORIDES

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It seems to be certain that many metal fluorides unknown and even unexpected today may be obtained. The tools we need are new ideas and new techniques for preparation.

I. What has been done? Key examples (1950-1975)

- II. What can we do? a) Change the starting material: On K_2MnF_6 ,
 b) Change the 'wall': $CsPd_2F_8$, - c) Control ourselves: On $Ba_2Ni^{II}Ni^{III}F_8$,
 d) Be patient: On diamagnetic Cs $[CuF_4]$
 e) Use high pressure fluorination: On $Ba[NiF_4]$
 f) Drop temperature: On $BaAlF_5$,
 g) Knot Rings: On $Ba_8F_4[Al_4F_{20}]$ and Ru_4F_{20} .

III. What should we do?

- a) Prepare what should exist
 b) Search for what exists in textbooks
 c) Look at the unbelievable
IV. Still open questions.

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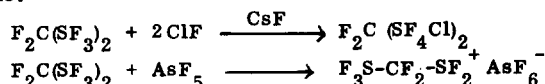
SOME REACTIONS OF UNUSUAL C-S-F-COMPOUNDS

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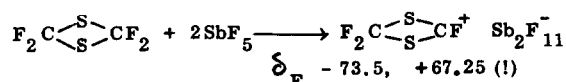
$F_2C(SF_3)_2$ (1, 2) was prepared in good yield at low temperatures and low pressures by direct fluorination of CS_2 . This low temperature-low pressure-cold surface fluorination technique is extended to other CS-compounds (e.g. OCS, Ba CS_3).

1 is starting material for new FCS-derivatives; in the presence of CsF it is oxidized by chlorine monofluoride:



AsF_5 will abstract only one fluoride under formation of the monocation.

Another unusual carbon-sulfur-cation is formed from tetrafluoro-dithiethane and SbF_5 :



This cyclic cation acts as a fluorinating agent even towards $CFCl_3$.

- 1 A. F. Clifford, H. K. El-Shamy, R. N. Haszeldine, H. J. Emeleus, J. Chem. Soc. 1953, 2372
 2 L. A. Shimp, R. J. Lagow Inorg. Chem. 16, 2974 (1977).