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RECENT INVESTIGATION OF DIVALENT METAL HEXAFLUOROANTIMONATES

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Reactions between metal difluorides (M = Cr, Fe, Ni, Ca, Sr, Ba) and excess antimony pentafluoride in anhydrous hydrogen fluoride yielded adducts with nonstoichiometric compositions. After prolonged pumping of volatiles at room temperature $MF_2.2SbF_5$ adducts were isolated for M = Cr, Fe, Ni. In the case of Ca, Sr and Ba the preparation described led only to nonstoichiometric compounds. The solid adducts were characterized by chemical analysis, vibrational spectra and X-ray powder diffraction patterns.

A single-crystal X-ray study on $AgF_2.2SbF_5$ showed that the crystals are triclinic, space group $P\bar{1}$, with unit-cell dimensions a = 5.224 (1), b = 5.466 (2), c = 8.779 (2) Å, α= 75.78 (2), β= 89.02 (2), γ= 65.29 (2)^{o}, and Z = 1. The Ag^{2+} ion has a square-planar coordination; two Ag-F distances are 2.09 and 2.13 Å, with two other F atoms at 2.43 Å, completing a distorted octahedron. There are also distorted SbF_6^- octahedra in the structure: four Sb-F distances range from 1.83-1.87 Å, while two distances are of 1.94 and 1.96 Å.