

PREPARATION OF NEW GRAPHITE INTERCALATION COMPOUNDS  
IN ANHYDROUS HYDROGEN FLUORIDE

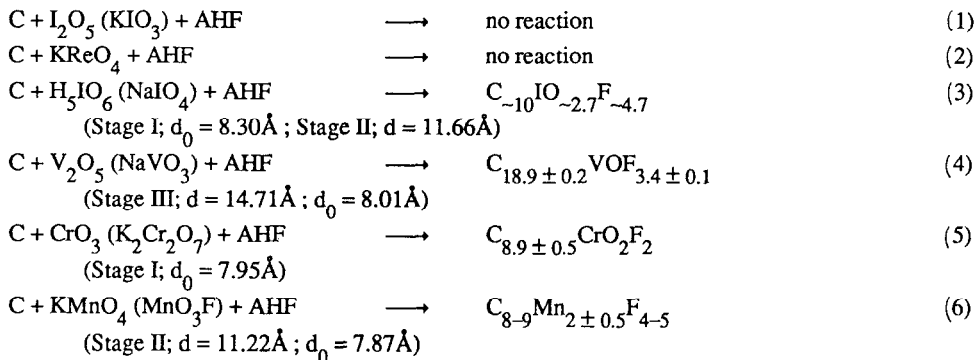
H. Selig

Institute of Chemistry, Hebrew University, Jerusalem (Israel)

and R. Gut

ETHZ, Laboratorium für Anorganische Chemie, CH-8092 Zurich  
(Switzerland)

Several new graphite intercalation compounds (GIC) have been obtained by preparing the intercalant *in situ* in AHF solutions and reacting these with graphite. The products were subjected to exhaustive chemical analyses and attempts were made to achieve mass balances between the starting materials and the final GIC products. The following systems were studied:



For reaction (3) a combination of oxidation power and F/I analyses indicates that the intercalant consists of mixtures of heptavalent (probably  $\text{IO}_2\text{F}_4^-$ ) and pentavalent ( $\text{IO}_2\text{F}_2^-$  or  $\text{IOF}_4^-$ ) species. In reaction (6) a paramagnetic GIC is obtained with possibly binuclear intercalate Mn species. The inclusion of HF in the products cannot be ruled out except for reaction (5).

We conclude that the prevalent practice of quoting stoichiometries based only on weight uptakes may be misleading as this does not take into account the possible presence of reduced species.