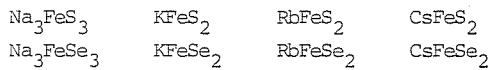


08.5-07 STRUCTURE AND MAGNETIC PROPERTIES OF
ALKALICHALCOGENOFERRATES.

By W. Bronger and P. Müller

Institut für Anorganische Chemie, RWTH
Aachen (F.R.G.)

Ternary ferrates of general composition $AFeX_2$ and
 A_3FeX_3 ($A \hat{=}$ alkali metal; $X \hat{=}$ S or Se) have been
prepared by fusion reactions:



X-ray investigations on single crystals revealed
their structures. They are characterized by frameworks
of edge-sharing tetrahedra, consisting of S- or Se-
atoms, centered by iron-atoms, which build up chains
in the case of $AFeX_2$ compounds and isolated double-
tetrahedra in the case of A_3FeX_3 -compounds. Suscepti-
bility measurements and the determination of the spin
structures by neutron diffraction show - dependent
on the ligand field parameters - the existence of
low spin states of the iron atoms in their tetrahedral
environment. This phenomenon has not been observed
up to now (Angew. Chemie (1981) 93, 12).