

## MS14-P22 | SYNTHESIS AND CRYSTAL STRUCTURE OF NEW ALKALI CHALCOGENIDO MANGANATES/INDATES

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In the system A-Fe-Q mixed-valent alkali chalcogenido ferrates are well known [1-3]. Recently we mimiced an equivalent mixed-valent state for Mn, by a partially replacement of Mn(II) by In(III) [4]. Now we present newly obtained metalates  $\text{Na}_{12}\text{MnIn}_2\text{Q}_{10}$  ( $Q=\text{S}, \text{Se}$ ) (1,2) as well as so far unknown indates  $\text{K}_6\text{In}_2\text{S}_6$  (3) and  $\text{K}_6\text{InS}_{4.5}$  (4). In all these compounds there are  $[\text{MQ}_4]$  tetrahedra, either isolated or connected via edges.

The compounds were obtained by heating stoichiometric mixtures of the elements or binary phases at  $T_{\text{max}}=1200\text{K}$ . All structures were determined by means of X-ray single crystal diffraction.

The compounds 1 & 2 crystallize in the space group  $P2_1/m$  and contain isolated  $[\text{InQ}_4]^{5-}$  tetrahedra as well as  $[\text{M}_2\text{Q}_6]^{7-}$  dimers with  $M=\text{Mn}$  and In.

$\text{K}_6\text{In}_2\text{S}_6$  crystallizes in  $P2_1/c$ . Though not isotypic, it shows similarities to  $\text{K}_6\text{Fe}_2\text{S}_6$  [5] with its  $[\text{In}_2\text{S}_6]^{6-}$  dimers of edge-sharing tetrahedra.

$\text{K}_6\text{InS}_{4.5}$  crystallizes in  $P6_3mc$  and is almost isotypic to  $\text{K}_6\text{MnS}_4$  [6]. The only difference is an additional S position, which is only partially occupied.

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