

Intercalation
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Structural and Electrochemical Studies of Rhombohedral $\text{Na}_2\text{TiM}(\text{PO}_4)_3$ and $\text{Li}_{1.6}\text{Na}_{0.4}\text{TiM}(\text{PO}_4)_3$ (M: Fe, Cr) Phosphates — The compounds $\text{Na}_2\text{TiM}(\text{PO}_4)_3$ (M: Cr, Fe) are synthesized by solid state reaction of stoichiometric mixtures of TiO_2 , M_2O_3 , $\text{NH}_4\text{H}_2\text{PO}_4$, and NaH_2PO_4 (1203 K). As revealed by powder neutron diffraction they crystallize in the space group $R\bar{3}c$ with $Z = 6$. NASICON $\text{Li}_{1.6}\text{Na}_{0.4}\text{TiM}(\text{PO}_4)_3$ are prepared by ion exchange of the Na analogues. These compounds crystallize in the space group $R\bar{3}$ with $Z = 6$. Na and Li electrochemical insertion, monitored by in situ XRD, indicate solid solution mechanisms for the whole intercalation range. The materials operate on the $\text{Fe}^{3+}/\text{Fe}^{2+}$ and $\text{Ti}^{4+}/\text{Ti}^{3+}$ redox couples in a very reversible way. — (PATOUX, S.; ROUSSE, G.; LERICHE, J.-B.; MASQUELIER*, C.; Chem. Mater. 15 (2003) 10, 2084-2093; Lab. React. Chim. Solides, CNRS, Univ. Picardie Jules Verne, F-80039 Amiens, Fr.; Eng.) — W. Pewestorf