Review paper on apatites from the CIZ-Roda-Robles et al.

- Line 19: replace "peraluninousity" by "peraluminosity".
- Line 52, after reference [15]: parenthesis is missing.
- Line 102 Cerny and Ercit, line 177 Cerny & Ercit : please uniformize. Also, please add the correct diacritical in the name of Peter Cerny: the correct spelling is "Černý".
- Lines 332 to 366. In this section, the authors describe the variations in wt. % for the different apatites. However, these variations are huge: for example, CaO from 37 to 55 wt. %, MnO from 1 to 10 wt. %, P2O5 from 33 to 44 wt. %. Such compositions do not reflect the real composition of the apatites: in Figure 2, you can clearly see that these extreme values are far away from the mean values. For example, in Figure 2, MnO is from 0 to 6 wt. %, P2O5 is from 37 to 43 wt. %, and CaO is from 45 to 55 wt. % (if you observe only the values in the boxes). I think that the extreme values, which may correspond to analytical errors, should be omitted from this discussion: only the reliable values should be used (for example, the values of the boxes in Figure 2, or the values appearing in the tables, which are even narrower). Indeed, an apatite-group mineral with 10 % MnO is certainly not an apatite any more: it may be a new Mn-dominant species….
- Table 2. I don't understand the choice of the basis for the calculation of the apatite formulae. The authors decided to choose a basis of 26 O atoms pfu, but the formula of apatite-group minerals is Ca5(PO4)3(F,OH,Cl), which contains 12 O and one other anion (F,OH,Cl). If you multiply this content by 2, it gives 24 O pfu, not 26. The total of positive charges, which equals the total of negative charges, is 25, multiplied by two it becomes 50. This corresponds to 25 oxygen, not 26. Consequently, I think that the correct basis, to be used here, is 25 oxygen, not 26.
- Lines 518 to 549. In this section the authors explain that the fO2 variations may be a parameter governing the incorporation of Mn end fe in the apatite structure, but that the most probable reason for the Mn and Fe variations is the availability of these elements in the melt. Of course, Mn2+ shows an ionic radius and a charge very close to those of Ca2+, and for that reason, Mn2+ is the most easy substituent in apatite. Fe2+ also shows a similar ionic radius, but it is smaller. Mn3+ and Fe3+ are both too small to be significantly incorporated in the apatite structure, and for that reason, a very high fO2 would not be favorable for Fe and Mn incorporation in apatite. However, it depends of the fO2 occurring in the pegmatitic and granitic rocks investigated here. For the oxidation of Mn2+ to Mn3+, a very high oxygen fugacity is necessary, which is observed during low-temperature hydrothermal or meteoric conditions. So, if the fO2 is close to the Ni/NiO buffer, Fe and Mn should mainly be divalent, and the fO2 should not play an important role in the control of these substituants. The main parameters being their availability in the melt, and the crystal-chemical constraints. In conclusion, I think that these paragraphs can be shortened and modified a bit….