**Supporting Information**

# Influence of $MnO_2$-birnessite microstructure on the electrochemical performance of Aqueous Zinc Ion Batteries.

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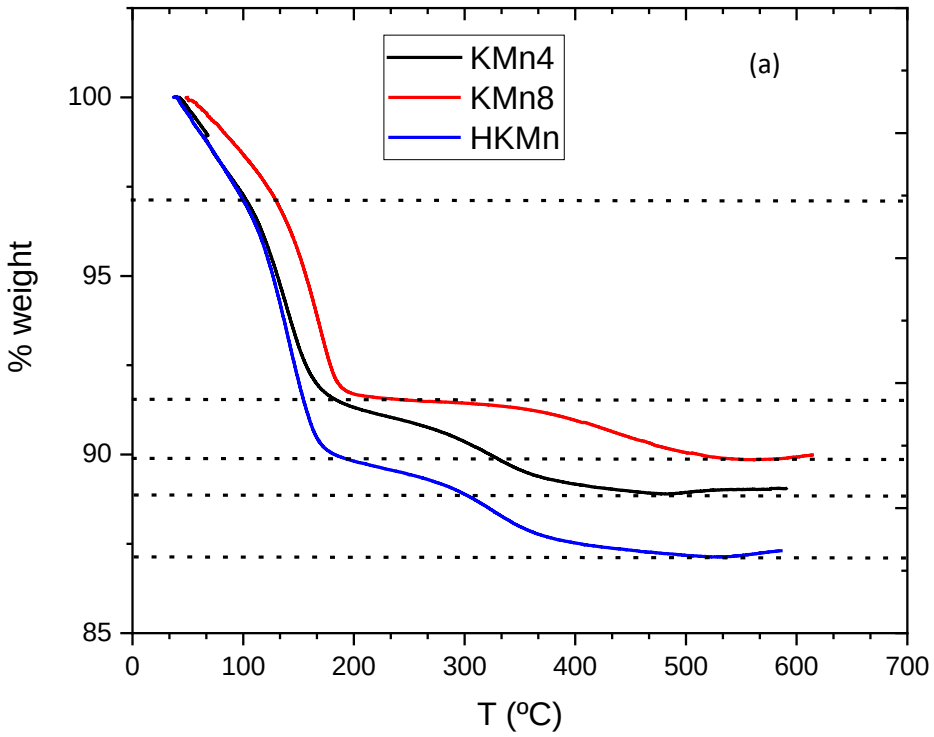

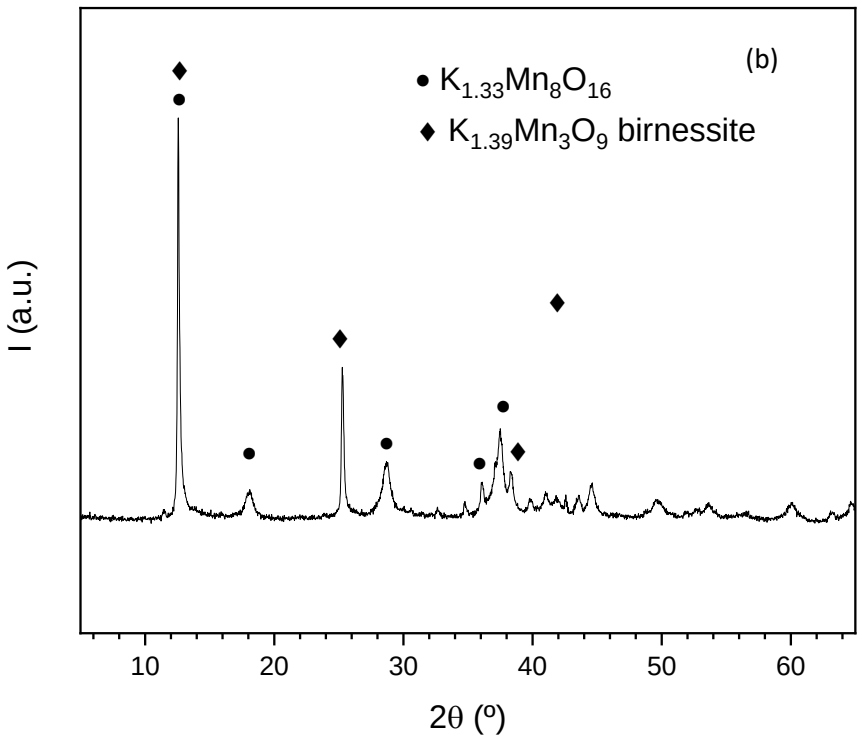
(b)
● $K_{1.33}Mn_8O_{16}$
♦ $K_{1.39}Mn_3O_9$ birnessite
I (a.u.)
10
20
30
40
50
60
2θ (º)

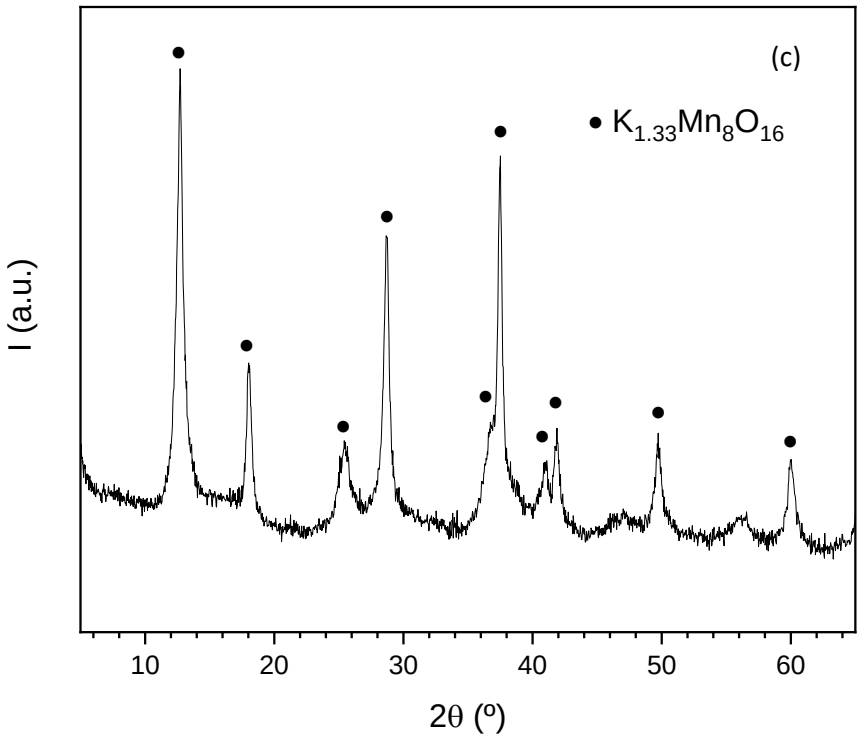
(c)
● $K_{1.33}Mn_8O_{16}$
I (a.u.)
10
20
30
40
50
60
2θ (º)

**Figure S1**.- a) Thermogravimetric analysis under $N_2$ for all samples. b) XRD profile of KMn8 residue, the maxima were assigned to a mixture of phases: birnessite and $K_{1.33}Mn_8O_{16}$ ; c) XRD profile of the HKMn residue, the maxima were indexed to $K_{1.33}Mn_8O_{16}$

**Table S1.** Weight loss from ATG data (%) and Structural formulas for birnessite-type material obtained from EDX and ATG data

| Sample | RT-110ºC | 110-200ºC | 250-500ºC | Formulae |
|---|---|---|---|---|
| KMn4 | 3.1 | 5.4 | 2.6 | $K_{0.3}MnO_2 \cdot 0.3H_2O$ |
| KMn8 | 2.1 | 6.2 | 1.5 | $K_{0.3}MnO_2 \cdot 0.4H_2O$ |
| HKMn | 3.1 | 6.8 | 2.9 | $K_{0.1}MnO_2 \cdot 0.4H_2O$ |