

We would like to thank the reviewers for comments on our submitted manuscript. We have considered all points carefully and revised our manuscript accordingly. In the “revised manuscript” the modified text has been highlighted. Our answers in the response letter are marked in red.

### **Reviewer 3**

#### Comments:

Thanks for the invitation to review the manuscript. Authors prepared various Mn based compounds and investigated their ORR activity in alkaline solution. The manuscript has not been organized well and many things require proper explanation.

1. In introduction it is not clear why Mn based materials should be combined with other metal oxide such as Co and La which can eventually increase the cost of electrocatalyst.

#### Answer 3.1

The explanation for the synergy of the oxide materials has been additionally added. Please see introduction in the revised manuscript.

2. Figure 1 is assigned as Figure 2.

#### Answer 3.2

Thank you. It has been corrected.

3. Figure 4 and 5 appears to be same. Also, most of electrocatalytic activity has been reported on RHE so authors should also convert SCE to RHE for better understanding and comparison with other catalyst.

#### Answer 3.3

Thank you for careful observation. It is corrected as stated in manuscript: Figure 4 is related to the CV of the analyzed material in nitrogen atmosphere, while the Figure 5 presents the LSV results of the materials in the oxygen atmosphere and it is corrected.

The SCE has been corrected to the RHE.

4. The ORR performance curves is not normal and there is no limiting current in most of catalyst. Why?

Answer 3.4

The limiting current is normal and it is appearing only for the electrochemical reactions that are limited by the reactant concentration (mass-controlled reactions) and here that is not the case.

5. Outdated KL equation should not been used to determine electron transfer number.

Answer 3.5

In general, Koutecky–Levich equation is well known equation which analysis allows obtaining critical kinetic parameters for the redox reactions.

Please find below the latest manuscripts published in the last years that are using the KL equations as well.

For example:

The manuscript publish in 2018

<https://doi.org/10.1007/s10008-017-3862-2>

The manuscript publish in 2020

<https://doi.org/10.1016/j.electacta.2020.136592>

The  $n$  value as well calculated in this manuscript from 2021 is using following eq. as well.

<https://doi.org/10.1016/j.jallcom.2020.157012>

6. Related referecnes should be included Hui Liu *et al* 2021 *J. Electrochem.*

Soc. **168** 080518; NPG Asia Mater., 2016, 8, e294; <https://doi.org/10.1002/sml.201804958>

Answer 3.6

Thank you for your suggestion, it has been included in the manuscript . Please check the corrected version of the manuscript.