Review of: "Ti2N nitride MXene evokes the Mars-van Krevelen mechanism to achieve high selectivity for nitrogen reduction reaction"

Yan Zhou

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Professor Djire and his colleagues studied the use of Ti_2N MXene as an electrocatalyst for boosting the electrocatalytic reduction of N_2 (NRR) to produce NH_3. Electrocatalytic reduction of N_2 to produce NH_3 is very important topic to study in order to make the ammonium industry to match with the renewable energies in the future. However, up to now, researcheres still looking for effective electrocatalyst that can efficiently produce NH_3 while compete with hydrogen evolution reaction in aqueous solutions. The idea of altering the reaction pathway of NRR to enhance selectivity of N_2 reduction is a well thought. However, still, there are some issues in the paper that may affect the creditability of this work. There are some suggestions that may help to improve the paper.

1. Although the authors have made comparsion for Ar and N_2 gases, isotopic measurements are still recommended.
2. There is lack of direct evidence to prove the NRR process on Ti_2N is via Mars-van Krevelen mechanism.
3. In Figure 2, why choose 10 mA cm^{-2} as a mark current density?
4. Still in Figure 2, the CV diferences between N2 and Ar for nitrides and carbonitrides are likely to be enhanced capactive current. But why the capcitive current density can affect the NRR performance?

After all, I really appreciate the attempts to seek out an effective electrocatalyst for NRR which can be used in aqueous environments. Because the rather complicated reaction mechanisms and large variety of potential materials, it is still meaningful to try out the available catalytic materials. Or perhaps solving the problem of solubility of N_2 in water, especially the localized concentration of N_2 around the electrode, or to improve the dissociation of N_2 molecules in water, is also equally important to enhance NRR performance.