Review of: "Synthesis, Characterization and Ameliorative Effect of Iron Oxide Nanoparticles on Saline-Stressed Zea Mays"

Atheel Alwash[1]

1 Al-Nahrain University

Potential competing interests: No potential competing interests to declare.

1. **In section 2.2**, in most precipitation methods, nanoparticles, you need to fix the pH of the solution at 12 or basic conditions. The author did not mention the pH of the solution. Pls add.

In the same section, **the resulting colloidal particles were then dried and examined further** Pls add the drying temperature and time of drying.

1. **In section 2.4**, **the soil was collected from a non-contaminated area on the premises of FUTO**

Pls add the full name of FUTO with its abbreviation.

How did the author know the sample was not contaminated (is there any analysis or approval)?

1. **In section 2.5**, it is better to add a table including the types of pots, irrigation, number of days, etc.
2. FTIR spectroscopic analysis, **section 3.1,**

The comparative study should be for both (plant extract and FeNPs).

The author did not indicate any functional groups for FeNPs (400-500) cm^{-1}.

Furthermore, the author should support the results with some references.

1. **In section 3.2**

The author supports the result of FeNPs with a reference that has an absorbance wavelength of 272 nm. The author ascribed the variation between the two results to the difference in the concentration of the phytochemicals involved in the synthesis.

The author should know "The difference in sample concentration leads to an increase in the **intensity of the absorbance** peak at the **same characteristic wavelength**. However, at higher concentrations, interactions between neighboring phytochemical molecules can occur. These interactions can influence the electronic structure of the chromophores, leading to shifts in the position of the absorbance peak. In addition, aggregation of some phytochemicals at higher concentrations can lead to bathochromic shifts due to enhanced pi-pi interactions between chromophores".

According to the above, the author has to find a suitable reason for the shifting and/or find a more suitable reference to support your results.

1. Re name Figure 2. Graph of wavelength against absorbance**to UV-Vis absorbance of FeO NPs.**
2. **In section 3.5**

- The resulting relative intensity and d value from the diffraction data were compared to the conventional FeO crystallographic data. Pls add the reference no. of the FeO crystallographic data.
- The average particle diameter size (D), and the average distance between planes of the FeONPs atoms (d-spacing) ……

Xrd can not measure average particle size. Crystalline size can be calculated according to the Scherrer equation as you explain in sec. 2.3.

Pls re-write the sentence and add "as it was calculated using Scherrer eq. (see sec 2.3)"

1. In Sec. 3.7, (O2•–). Pls correct the subscript
2. In conclusion section, at 80 **0C** Pls correct the subscript

- Pls add more specific results in your section to highlight your work since you have a huge data and results.