

## ***Interactive comment on “Surface Water Purification using cellulose Paper Impregnated with Silver Nanoparticles” by Shahad A. Raheem and Alaa H. Alfatlawi***

### **Anonymous Referee #1**

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This study investigated the surface water purification using cellulose paper impregnated with silver nanoparticles. Generally, this topic is formative. In this study, the material and methods are superficial and experiments should be added. Moreover, the lack of discussion and explanation on the novelty is the major concern for publishing. Therefore, I recommend the authors to emphasize the meaning of this study and to address some issues before its consideration for acceptance. The detailed comments are given:

Introduction 1) Line 44 - “Graphene, activated carbon, and nepheline films have also been studied for AgNP immobilized antibacterial surfaces”. What made you choose

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for cellulose paper? Suggestion is to address advantages of cellulose paper regarding to other materials. 2) Objective of the research is lacking 3) There has been already done research on silver particles impregnated in the cellulose paper. The novelty of the paper should be explained and added.

Materials and methods 1) Detailed explanation on sampling and water characterisation is missing. Why was this water chosen as a model water? 2) How were the bacteriological analysis done? How were the colonies counted? 3) line 54 – origin of the cellulose paper should be stated. 4) line 56 – why were ratios 2:1 and 10:1 chosen? 5) Figure 1 – should be repeated with different background/ preferably white background 6) Details of the measurements regarding SEM and TEM should be given.

Results 1) Reference on turbidity removal with only cellulose paper should be measured 2) Line 125 Minimum Inhibitory concentration should be mentioned and defined earlier in the manuscript 3) Line 132 – “It was observed that for all types of bacteria, the NaBH<sub>4</sub>/AgNO<sub>3</sub> ratio of 10:1 resulted in complete inactivation of bacteria in less silver content than the 2:1 ratio and that because the 10:1 ratio resulted in smaller and more uniform AgNPs which led to more contact between the silver nanoparticles and the bacteria.” It is difficult to make very clear conclusions if Figures 3 and 4 are compared. Removal efficiencies for figures 3 and 4 are almost the same whereas silver content should be reconsidered in order to draw better conclusions.

Conclusions 1) Line 161 - “AgNPs papers can be used a good point of use filters” – This is strong conclusion since it was not compared to other technologies. 2) I suggest conclusion to be revised.

Abbreviations are not correct and should be corrected.

References Suggestion is to use recent references.

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