



SDI Review Form 1.6

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	Ms_BJAST_25686
Title of the Manuscript:	Silver nanoparticles as inhibition agent of cooling tower microorganisms
Type of the Article	Original research paper

General guideline for Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty**', provided the manuscript is scientifically robust and technically sound.

To know the complete guideline for Peer Review process, reviewers are requested to visit this link:

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PART 1: Review Comments

	Reviewer's comment	Author's comment (if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)
Compulsory REVISION comments	This study is an interesting contribution in the field of Ag nanoparticles study that fits with the required criteria for publication in BJAS&T. However, the paper can be improved; more specifically the quality of the figures. The HRTEM image of figure 3a needs to be improved. This image only shows a big agglomerate of Ag nanoparticles. The authors should change this image and add a HRTEM image in which at least 1 nanoparticle is clearly visible. It is hard to see the morphology and the size of the Ag nanoparticles in the present HRTEM image.	We thank the reviewer for the constructive comments on the manuscript. The equipment available in our institution is not adapted for high resolution images. We are presenting the highest magnification image and interpretation is made taking into account the available data. Though grain boundaries are not clear, contrast in
	Why did the authors only include one XRD pattern? They should comment on the other XRD patterns. Are they different? In addition, what is the origin of the broad shoulder visible at the lowest angles?	Once Ag⁺ ions reduction was inferred from the Plasmon absorbance, only one diffractogram is added to reinforce that plasmon absorbances in fig 1 correspond to metallic silver. The next paragraphs were added: "The sample for XRD was prepared by evaporating 50 mL of nanoparticles solution at 60 °C until the volume diminished to approximately 2 mL, then three drops of the concentrated solution were deposited onto a glass slide for complete evaporation, and this process was repeated until the nanoparticles solution was over. The resulting thin film was then introduced in the diffractometer." "The noisy profile appeared due to the low content of nanoparticles and the intense background was produced by the amorphous glass sample support."
	In table 1, the authors should include a realistic error bar. In fact, DLS measurements indicate	The next comment was added. "Despite mean sizes obtained with our method range from 49 to 76 nm, dispersion is acceptable since the largest population



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	that the size distribution is quite broad. This error bar should then be taken into account in the discussion and the authors should not only consider the average value.	percentage in the highest Gaussian curves in Figure 2 are between 84 and 93% as listed in Table 1."
<u>Minor</u> REVISION comments	The resolution of figure 4 is very low and it is difficult to read the characters.	This graph was completely modified to achieve the required quality for its publication.
	The paragraph from line 40 to 46 should be completely rewritten.	The paragraph was rewritten.
<u>Optional/General</u> comments	The English needs to be improved. The manuscript should be carefully read by a person proficient in English; there are numerous typos (further, Cr����, f, the to the...) and grammatical errors.	An American company revised the manuscript.
	The authors should maybe comment on their broad size distribution. It is commonly admitted that it is difficult to obtain a sharp size distribution using green synthesis methods. I would suggest the authors to compare their method with green synthesis methods. A recent review paper has highlighted the broad size distribution of Ag nanoparticles synthesized using green synthesis method (Advances in Materials Science and Engineering_Hindawi, Volume 2015, Article ID 682749, 1-9 (2015)). This reference can be added in the discussion about the broad size distribution obtained using ascorbic acid.	Reference 14 and the next paragraph were included: "The synthesis here reported seems to be an adequate way for large scale production of silver nanoparticles in terms of cost, effectiveness (demonstrated in the next section) and the low toxicity of reagents employed. A current trend to eliminate toxicity in nanoparticles production processes is green chemistry, however, the production times and large, for example, using plants as nanoparticles producers, common times are between 24 and 124 h, while our method takes 20 minutes [14]. Additionally, green synthesis employing fungi, bacteria or plants does not finely control shape and size distribution as demonstrated by some authors who produced 2 nm particles with alfalfa or yeast, or 200 nm particles with Pseudomonas stutzeri AG259. Despite mean sizes obtained with our method range from 49 to 76 nm, dispersion is acceptable since the largest population percentage in the highest Gaussian curves in Figure 2 are between 84 and 93% as listed in Table 1." <u>Comparison between green synthesis and our traditional method</u>



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Green synthesis (according to the Review)	Our method
	We don't use harmful reductants, dangerous side products are not formed, high energy is not required (35C is not high energy consumption).
Production with bacteria has low yield, and isolation of NP is difficult	
a green synthesis approach are the choice of the solvent medium (preferably water), an environmentally friendly reducing agent, and a nontoxic material for the stabilization of the nanoparticles	We include all this criteria, except the alkalization with NaOH.
With bacteria, the synthesis is slow, Aspergillus fumigates in 10 min. with plants is faster, alfalfa produce in 9 h, with plant extract (use more energy)	fast, less than 30 min.
	Although the review concludes that plants are currently the most cost-effective way to produce silver nanoparticles, size distribution and morphology is now well controlled, in principle, biochemical mechanisms are diverse and the depend on variations of the growth media