



SDI Review Form 1.6

Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_11049
Title of the Manuscript:	Synthesis and Glass immobilization of carbon and nitrogen doped TiO ₂ -SiO ₂ and its effect on E. coli ATCC 25922 bacteria
Type of the Article	

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.

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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	The authors claimed that they prepared visible-light active photocatalysts (C-, N-modified). However, the activity of bare titania (in the form of powder) was much higher than modified ones. The DRS spectra are practically the same for TiO₂-SiO₂, C-TiO₂-SiO₂ and N-TiO₂-SiO₂ (they should be shown in one Figure for better comparison). In addition, doping character has not been proved (EDX shows only existence of C and N, in addition data for non-modified titania should be also presented as reference data). It was reported that some modification with urea (and similar compounds) results in titania surface modification, but not in doping. The papers of Prof. Kisch have not been discussed at all. It is surprised that the authors did not prepared C- and	We successfully prepared visible light responsive C-/N-TiO₂ as evidenced by diffuse reflectance data. Please note that immobilized TiO₂ (i.e. TiO₂-SiO₂) has less antimicrobial activity compared C-TiO₂-SiO₂ and N-TiO₂. Un-immobilized TiO₂ had higher activity because of surface area issues, hence it was capable of producing more oxidizing species ($\cdot\text{OH}$, $\cdot\text{O}_2^-$) compared to immobilized photo-catalysts. We believe that the DRS can be clearly interpreted the way we presented rather than in a single figure to avoid overcrowding. The most important aim in our view was to show the derivatives which gave accurate values of the absorption band edge for each photo-catalyst. We acknowledge that the EDX data is not very good which could have been as a result of contamination. SXPS data has been added to prove doping. The work done by Prof Kisch has been acknowledged in additional discussion.



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	N- modified titania in the form of powder to check if this modification results in activity increase. It is more recommended to perform XRD than FT-IR, thus authors could have clear crystallinity data. It is also surprised that authors did not show reference data under dark conditions. The authors should improve discussion in comparison to other results..	The main aim of the research was to establish performance of immobilized C-/N-TiO₂, in a bid to address post-recovery of spent photo-catalyst. This fact was established from the results obtained that glass immobilization is not the most ideal support when it comes to antimicrobial applications. Hence the focus of our future work will be to establish the most suitable material which does not compromise antimicrobial activity as glass has done in this work. DRS results clearly show visible light response for C-/N-TiO₂. XRD data has been added as suggested by reviewer. Dark experiments are represented by the control. Reviewer should note that controls of the experiment are many: 1. Can have all the necessary elements/ conditions except the photo-catalyst, 2. Can have photo-catalyst and all the necessary elements/ conditions, but carried out in the dark. The above conditions were explored and thus are represented by the control. Authors have added more information to the discussion as suggested.
<u>Minor</u> REVISION comments		
<u>Optional/General</u> comments		