Reviewer Invitation for RSER-D-21-01508

From: Renewable & Sustainable Energy Reviews (em@editorialmanager.com)

To: uyi_sulaeman@yahoo.com

Date: Friday, August 13, 2021, 04:11 PM GMT+7

Ms. Ref. No.: RSER-D-21-01508
Title: Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells
Renewable and Sustainable Energy Reviews

Dear Dr. Uyi Sulaeman,

Given your expertise in this topic, we would appreciate your comments in a review of "Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells" within 13 days. The title, authors' names and the abstract of the manuscript is shown at the bottom of this email. As we look to provide comments promptly to authors, we kindly ask that you accept or decline this invitation within the next 5 days. Before you begin your review we would be most obliged if you read the 'IMPORTANT RSER EDITORIAL POLICY GUIDANCE FOR REVIEWERS' at the bottom of this email.

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Yours sincerely,

Yanjun DAI, Ph.D
Associate Editor
Renewable and Sustainable Energy Reviews

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Title: "Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells"
Article Type: Review Article
Section/Category: Solar Materials
Keywords: Carbon nanotubes; Dye-sensitized solar cell; counter electrode; cyclic voltammetry; Electrochemistry; Photovoltaics
Corresponding Author: Dr. Muhammad Imran Shahzad
Corresponding Author's Institution: NCP: National Centre for Physics
First Author: Nadia Shahzad, PhD
Order of Authors: Nadia Shahzad; Lutf Ullah; Tahira Perveen; Diego Pugliese; Sirajul Haq; Nusrat Fatima; Syed Muhammad Salman; Alberto Tagliaferro; Muhammad Imran Shahzad
Abstract: Efficiency, stability, and cost-effectiveness of are the prime challenges in research of materials for solar cells. Technologically as well as scientifically, attention gained by dye-sensitized solar cells (DSSCs) stems from their low material and fabrication costs and high efficiency projections. The objective of this study is to explore

the the carbon nanotubes (CNTs) based counter electrode (CE) materials for DSSCs and to reconnoiter the suitable alternative materials in place of noble metals such as Pt, Au etc. Various classes of counter electrode materials based on CNTs including pure single walled, double walled, and multiwalled CNTs, doped CNTs and their hybrid composites with various polymers, metal and semiconducting oxides are discussed comprehensively in light of the research work started since the inspection of DSSCs and CNTs. The properties, associated with such materials including surface morphology, structural determination, thermal stability, and electrochemical activity, are also thoroughly analyzed and compared.

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SURAT TUGAS

Nomor : 3640 /UN23.15/DL/2021

Dasar : Surat dari Editor Renewable and Sustainable Energy Reviews

Dekan Fakultas Matematika dan Ilmu Pengetahuan Alam Universitas Jenderal Soedirman memberikan tugas kepada :

Nama	:	Uyi Sulaeman, Ph.D
NIP	:	197307052000031001
Pangkat dan Golongan	:	Pembina / IVa
Jabatan	:	Lektor Kepala
Untuk	:	Menjadi Reviewer untuk " Renewable and Sustainable Energy Reviews " dengan Judul Artikel "Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells Renewable and Sustainable Energy Reviews"
Waktu	:	14 Agustus – 3 September 2021

Surat Tugas ini dibuat untuk dilaksanakan dengan penuh tanggungjawab.

Purwokerto, 9 September 2021
Dekan,

Drs. Sunardi, M.Si.
NIP 195907151990021001

Tembusan Yth.
1. Ketua Jurusan Kimia Fakultas MIPA UNSOED

Reviewer Recommendation and Comments for Manuscript Number RSER-D-21-01508

Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells

Original Submission
Uyi Sulaeman, Ph.D. Reviewer 3

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Recommendation: Major Revise **Overall Manuscript Rating (1 - 100):** 70

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*If this submission is transferred to another journal, do we have consent to share your identity with the receiving journal Editor(s)?	Yes
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Reviewer Comments to Author

The manuscript explored the carbon nanotubes (CNTs) based counter electrode (CE) materials for DSSCs. It discussed the counter electrode materials based on CNTs including pure single-walled, double-walled, and multi-walled CNTs, doped CNTs, and their hybrid composites with various polymers, metal, and semiconducting oxides. This manuscript is interesting and comprehensively reviewing the CNTs counter electrode, It can be published in the journal. Here, my comments that should be addressed by the Authors.

1. Part 2.2 (Photoanode), Authors explore in the photoanode the surface area, bandgap, morphology, and dopant. The authors should also explore the blocking layer in photoanode, what kind of new blocking layer the Authors have found recently? It should not be neglected. Authors can learn from Renewable and Sustainable Energy Reviews 74 (2017) 438-452.

2. Page 11, Authors mentioned: …"the band gap should be large enough to effectively transfer all the illuminating light to the sensitizer "…
What does it mean?
Usually, to improve the photoanode, researchers increase the penetration of light and increase the scattering of light to obtain more lights that will be absorbed by the sensitizer.

3. The Authors wrote on Page 12: "To improve the performance of the photoanode, these nanostructures can be doped with various ions such as Zn2+, La3+, Nd3+, Er3+, and Ho3+ and can also be decorated with different noble metals such as silver, chromium, copper, and gold [70]."
The Authors should check again the reference of no. 70. This reference has only reported the Au-doped TiO2.

4. Page 15, Authors showed in Fig. 3, the different forms of CNTs used as CE materials of DSSCs that consist of composite, randomly oriented CNTs, and vertically aligned CNTs. However, there is no discussion about these forms. It is also very important for Authors to discuss the form that has great potential to develop.

5. Page 16, in section 4.1, the Authors discussed three forms of SWCNTs, DWCNTs, and MWCNTS. Do Authors find the latest information?, which one is the best of these structures for CE development? The authors should highlight it.

6. Authors wrote on Page 23: "Arbab et al. fabricated CEs for DSSCs composed of MWCNTs functionalized with different enzymes (laccase, glucose oxidase, and lipase) [130]. The paste of the enzymatic solution of lipase was prepared in ethanol, followed by the addition of MWCNTs and carboxymethylcellulose (CMC) in the solution and aging overnight. The CE film was synthesized on FTO glass through tape casting method. The enzymatic functionalization of the MWCNTs allowed increasing the contact points between the CE and the electrolyte and enhancing the electron transportation, thus leading to a noticeable conversion efficiency of 7.52%."
Can Authors find and discuss the stability of this device? The enzyme application might have low stability.

7. The Authors wrote on page 32. "A. Ali et al. modified highly aligned MWCNTs fiber composite and starting from it they subsequently fabricated a CE through a simple dip-coating method to be applied in DSSC [147]. Modified MWCNTs based CE exhibited a noticeable improvement in catalytic performance in comparison to the pristine MWCNTs fiber electrode and led to an overall conversion efficiency of 5.03%, slightly higher than that obtained in presence of a traditional Pt electrode (4.98%). Good photovoltaic performance even after bending up to 90° was also successfully obtained."
The Authors should mention what kind of polymer has been used in this modification. It is also better for authors to add more data of polymer-modified CE that has higher PCE compared to the Pt.

8. Page 38, Author wrote: ….vanadium sulfide (VS2) and bismuth sulfide (Bi2S3)...
There is no reference in VS2 and Bi2S3.

9. On page 63, section 5: Concluding remarks, the Authors should describe the significant finding in the literature that potential to develop for commercializing the DSSCs and make a recommendation. This recommendation is very important for other researchers.

Reviewer Confidential Comments to Editor:

1. Is the subject matter suitable for publication in Renewable and Sustainable Energy Reviews considering the new scope? Does the paper address renewable and sustainable energy -relevant topics and provide a clear and compelling introduction to and discussion of the relevance? Yes

2. Does the paper provide an original and more significant than minor contribution to the literature? Yes

3. Does the paper contain material that could be omitted? No

4. Are the implications of the work clearly presented in the Discussion and Conclusions sections? Yes

5. Is the English of the paper suitable for publication? Yes

6. Does the paper's title convey the content of the paper? Yes

7. Is the paper's abstract concise and informative while conveying the content of the paper? Yes

8. Do the paper's Highlights reflect the paper's content and implications? Yes

9. Are all the references to relevant published work included? Yes

10. Are all the Illustrations and Tables informative, well presented, needed and acknowledged if subject to copyright? Yes

11. In your opinion what type of article is this paper i.e. a review article (i.e. typically greater than 50% review), an original research article, a case study article, technology analyses (i.e. focus on a piece of renewable energy or sustainable energy technology), a letter to the editor, a response to letter to the editor, a special issue (i.e. by invitation only), an Expert Insight (by invitation only) It is a review article.

12. In your opinion does the paper make a novel and or useful contribution to the field of already published material? Yes

For each question, please use the following scale to answer (place an x in the space provided):

"To what extent does the article meet this criterion?"

0 Fails by a large amount
1 Fails by a small amount
2 Succeeds by a small amount
3 Succeeds by a large amount
4 Not applicable

2

The subject addressed in this article is worthy of investigation.

0 __1 __2_x_3 __4

The information presented was new.

0 __1 __2 _x_3 __4

The conclusions were supported by the data.

0 __1 __2 _x_3 __4

Is there a financial or other conflict of interest between your work and that of the authors?

YES __ NO _x_

Finally, please give a frank account of the strengths and weaknesses of the article: Strengths: the manuscript comprehensively reviews the carbon nanotubes (CNTs) based counter electrode (CE) materials for DSSCs. Weaknesses: there is no recommendation for researchers what kind of the best modification to further developed in the future.

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Thank you for the review of RSER-D-21-01508

From: Renewable & Sustainable Energy Reviews (em@editorialmanager.com)

To: uyi_sulaeman@yahoo.com

Date: Thursday, September 2, 2021, 09:13 AM GMT+7

Ms. Ref. No.: RSER-D-21-01508
Title: Counter electrode materials based on carbon nanotubes for dye-sensitized solar cells
Renewable and Sustainable Energy Reviews

Dear Dr. Uyi Sulaeman,

Thank you for taking the time to review the above-referenced manuscript. You can access your comments and the decision letter when it becomes available.

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Yours sincerely,

Yanjun DAI, Ph.D
Associate Editor
Renewable and Sustainable Energy Reviews

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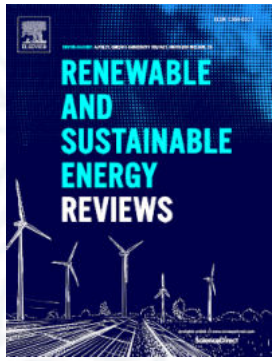

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Awarded since August 2018 (6 reviews)
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Renewable and Sustainable Energy Reviews

COUNTRY	SUBJECT AREA AND CATEGORY	PUBLISHER	H-INDEX
United Kingdom Universities and research institutions in United Kingdom	Energy Renewable Energy, Sustainability and the Environment	Elsevier Ltd.	337

PUBLICATION TYPE	ISSN	COVERAGE	INFORMATION
Journals	13640321	1997-2021	Homepage How to publish in this journal Contact

SCOPE

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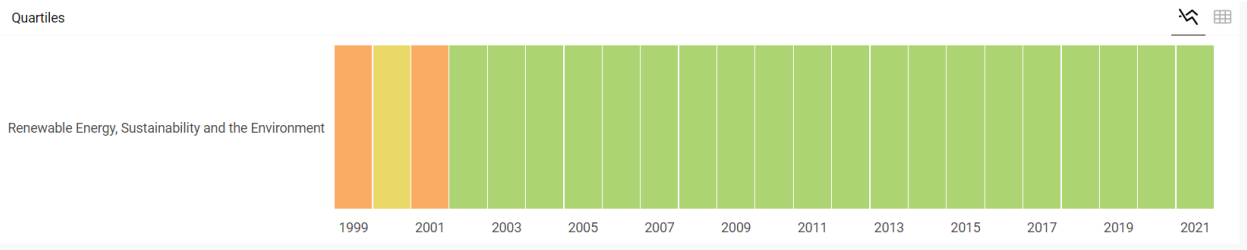

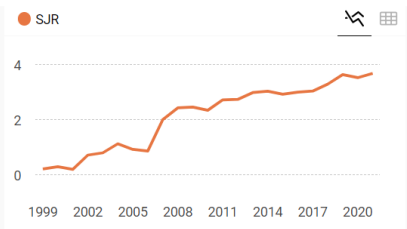

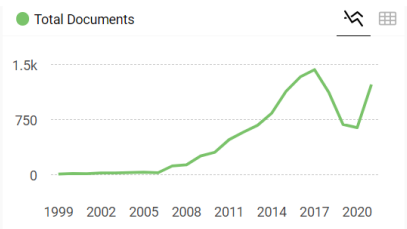

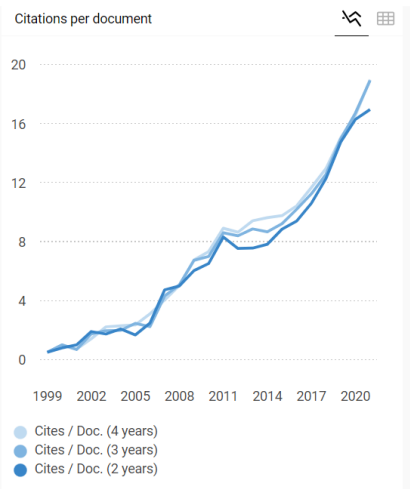

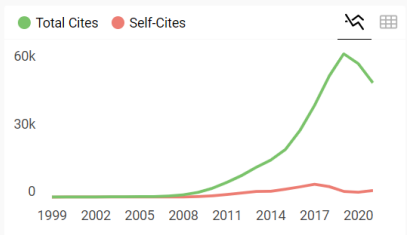

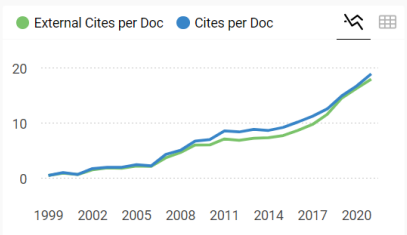

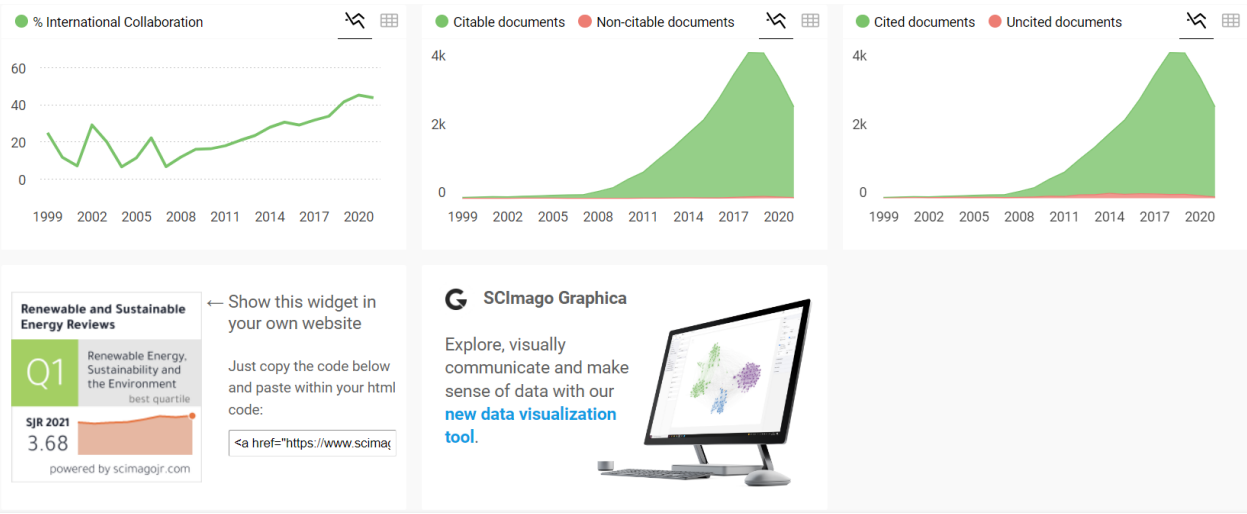

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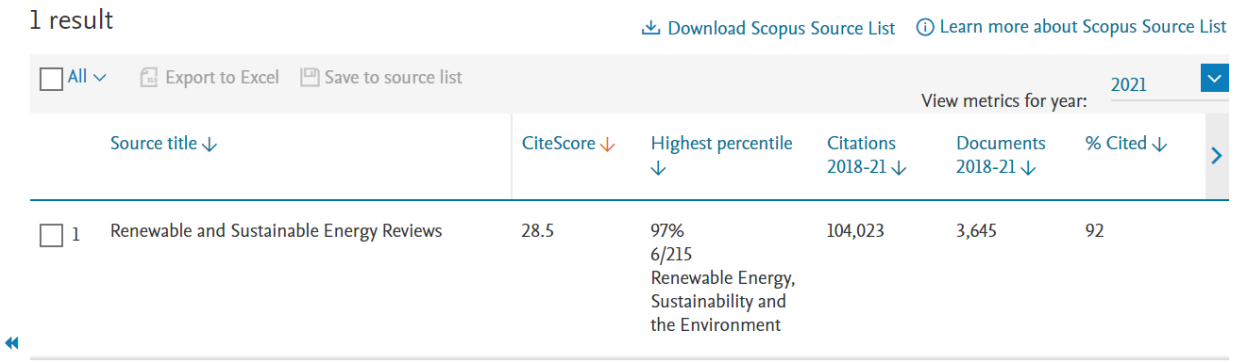

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