# Invitation to review IJLEO-D-18-04845

From: Muhammad Faryad (eesserver@eesmail.elsevier.com)

To: uyi_sulaeman@yahoo.com

Date: Sunday, March 10, 2019 at 01:38 PM GMT+7

Ms. Ref. No.: IJLEO-D-18-04845
Title: Preparation and characterization of vertical regular arrayed and needle-shaped irregular titanium dioxide nanotubes for dye-sensitized solar cells
Optik – International Journal for Light and Electron Optics

Dear Uyi Sulaeman,

Given your expertise in this area, I would appreciate your comments on the above paper. I have included the abstract of the manuscript below to provide you with an overview.

If you are unable to act as a reviewer at this time, I would greatly appreciate your suggestions for alternate reviewers.

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Yours sincerely,

Muhammad Faryad
Section Editor
Optik – International Journal for Light and Electron Optics

ABSTRACT:
This study investigated the effect of surface modification on the photovoltaic characteristics of TiO2 electrodes. The modification was done by increasing the TiO2 nanoparticles in order to increased dye absorption. The crystal phase features, morphology, and topography were assessed through such techniques as XRD, SEM, and AFM. This addition was done with several methods including ultrasonic bathing, spin-coating and immersing in an autoclave that among these techniques autoclave has the highest efficiency. Furthermore, TiO2 nanotubes (TNTs) and needle-shaped irregular nanotubes were designed on Ti sheet and Ti layer deposited on FTO glass. The characterization results point to a maximum efficiency of 2.5% that belongs to the solar cells composed of TiO2 nanotube photoanodes in TNTs on Ti layer sputtered on FTO glass. In the sample of solar cells with TiO2 nanotubes photoanode, which TNTs were designed on Ti sheet, the efficiency was 1.24%. Finally, for solar cells composed of TiO2 nanotube photoanodes with needle-shaped irregular nanotube arrays designed on Ti layer sputter upon FTO glass and TiO2 nanotube photoanodes with a needle-shaped irregular nanotube array designed on Ti sheet, the efficiencies were respectivly 0.54% and 0.44%.

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# SURAT TUGAS

Nomor : 841/UN23.11/DL/2019

Berdasarkan surat dari Editor Jurnal Optik-International Journal for Light and Electron Optics ,

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

| | | |
|---|---|---|
| Nama | : | Uyi Sulaeman, Ph.D |
| NIP | : | 197307052000031001 |
| Pangkat dan Golongan | : | Penata Tk I / IIId |
| Jabatan | : | Lektor Kepala |
| Untuk | : | Menjadi Reviewer Jurnal Optik (Elsevier) |
| Waktu | : | 18 – 23 Maret 2019. |
| Tempat | : | Kampus FMIPA UNSOED |

Surat Tugas ini dibuat untuk dilaksanakan dengan penuh tanggungjawab.

Purwokerto, 19 Maret 2019

Dekan,

Drs. Sunardi, M.Si.
NIP 195907151990021001

Tembusan Yth.
1. Ketua Jurusan Kimia Fakultas MIPA UNSOED

**Reviewer Recommendation and Comments for Manuscript Number IJLEO-D-18-04845**

**Preparation and characterization of vertical regular arrayed and needle-shaped irregular titanium dioxide nanotubes for dye-sensitized solar cells**

Original Submission
Uyi Sulaeman (Reviewer 4)

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**Recommendation:** Major Revision **Overall Manuscript Rating (1-100):** 75

**Reviewer Blind Comments to Author:**
This manuscript discussed the preparation and characterization of vertical regular arrayed and needle-shaped irregular titanium dioxide nanotubes for dye-sensitized solar cells. Though the efficiency is very low, the results are interesting. The authors should revise the manuscript carefully.

1. In Introduction, Authors mentioned: "Cell efficiency gradually rose from 7% in 1991 to around 12% in 2011, but the use of peroxide-sensitive mesoscopic cells increased it to 14.14% in 2013 [3,5,7]".
The ref. no.5 should be checked again because this reference discussed the photoelectrochemical water splitting, not DSSCs. The authors should write a specific reference.
I suggest the authors refer to Renew. Sust. Energ. Rev. 74 (2017) 438-452, Chem. Mater. 27(2015)1359-1366.

2. Authors have written: "Due to the formation of fluoride complexes in a solution containing HF electrolyte, an oxide is produced according to Equations 2 and 3 [27,28]".
I did not find an oxide in Eq.2 and 3.

3. In section 2.2.: the authors mentioned: " ... to produce abnormal nanotubes, an electrolyte of 0.76 cc containing a mixture of DI water (1 M) and HF (0.2 M) reached the volume of 100 ml with ethylene glycol in a volumetric Erlen".
What is the term of "abnormal" nanotube?

4. The authors had used TiCl4. The research of DSSCs have commonly used this preparation to obtain high efficiency? However, in this manuscript, the efficiency is still low, the highest achieved at only 2.5%.
Could the authors explain the reason?

5. In section 2.4: the authors mentioned: "TiO2 nanoparticles were added to the surface of some samples in three different ways in order to increase the level of dye adsorption. What kind of three different ways?

6. At Figure 5, the author should give the annotation which one the anodized and non-anodized in the image.

7. Author has discussed: "A comparison of the samples that contained needle-shaped irregular nanotubes indicated that adding some TiO2 nanoparticles would increase the efficiency of solar cells".
Can authors show these data? The data of efficiencies due to adding the nanoparticles is not clear.

8. Table 2 and 3 contain the column of "on the Ti deposited on the FTO", but the column is empty (no data). It is not necessary to provide an empty column.

9. The highest efficiency could be achieved at vertical regular with on the Ti deposited on the FTO (Table 1). However, the various method test in Table 2 and 3, showing that the efficiency is low.
How do the authors explain these results?

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**Reviewer Confidential Comments to Editor:**
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 x Succeeds by a small amount
3 Succeeds by a large amount
4 Not applicable

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_

Please give a frank account of the strengths and weaknesses of the article:
The strength is the results of contribution in 1 dimensional material (nanotubes) for DSSCs. The weaknesses are low efficiency and unclear discussion.

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# Thank you for the review of IJLEO-D-18-04845

From: Muhammad Faryad (eesserver@eesmail.elsevier.com)

To: uyi_sulaeman@yahoo.com; uyisulaeman@gmail.com; sulaeman@unsoed.ac.id

Date: Tuesday, April 2, 2019 at 08:53 AM GMT+7

*** Automated email sent by the system ***

Ms. Ref. No.: IJLEO-D-18-04845
Title: Preparation and characterization of vertical regular arrayed and needle-shaped irregular titanium dioxide nanotubes for dye-sensitized solar cells
Optik - International Journal for Light and Electron Optics

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,

Muhammad Faryad
Section Editor
Optik - International Journal for Light and Electron Optics

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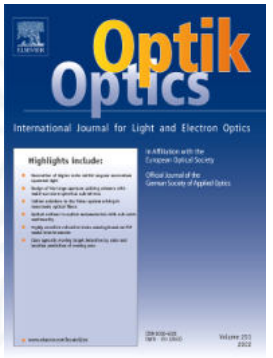


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## UYI SULAEMAN

in recognition of the review contributed to the journal

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Engineering
- Electrical and Electronic Engineering

Materials Science
- Electronic, Optical and Magnetic Materials

Physics and Astronomy
- Atomic and Molecular Physics, and Optics

**PUBLISHER**

Urban und Fischer Verlag
Jena

**H-INDEX**

79

**PUBLICATION TYPE**

Journals

**ISSN**

00304026, 16181336

**COVERAGE**

1946, 1968-1988, 1993-2021

**INFORMATION**

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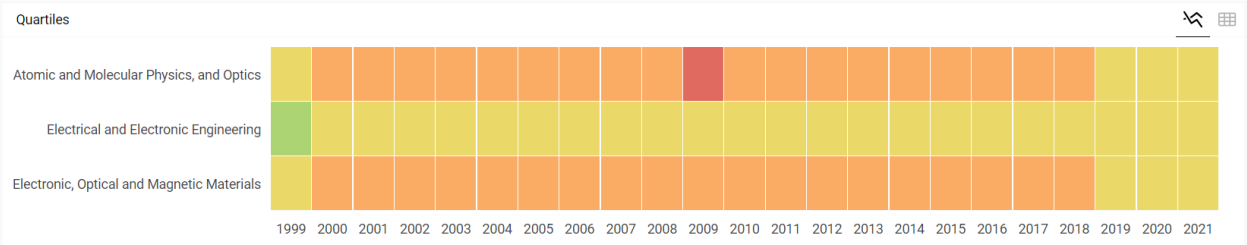
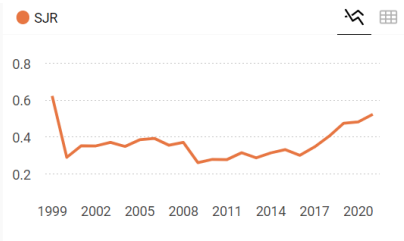
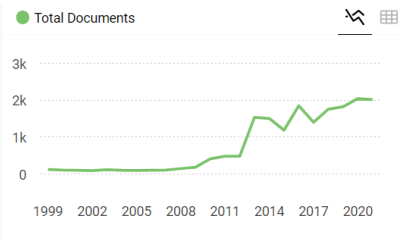
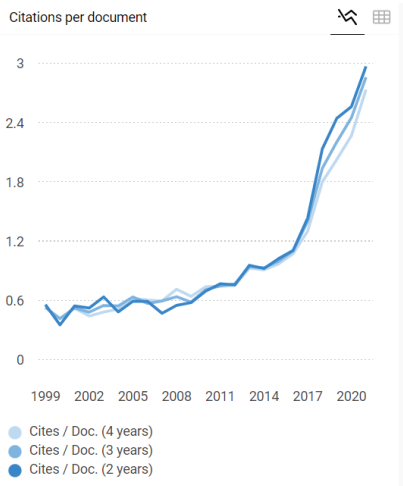
**SCOPE**

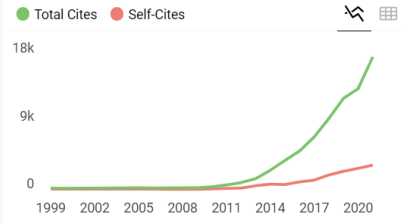
Optik publishes articles on all subjects related to light and electron optics and offers a survey on the state of research and technical development within the following fields: Optics: -Optics design, geometrical and beam optics, wave optics- Optical and micro-optical components, diffractive optics, devices and systems- Photoelectric and optoelectronic devices- Optical properties of materials, nonlinear optics, wave propagation and transmission in homogeneous and inhomogeneous materials- Information optics, image formation and processing, holographic techniques, microscopes and spectrometer techniques, and image analysis- Optical testing and measuring techniques- Optical communication and computing- Physiological optics- As well as other related topics.

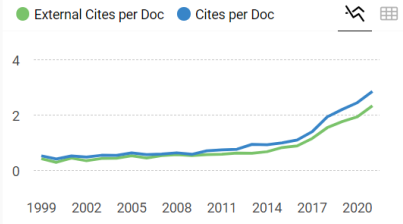


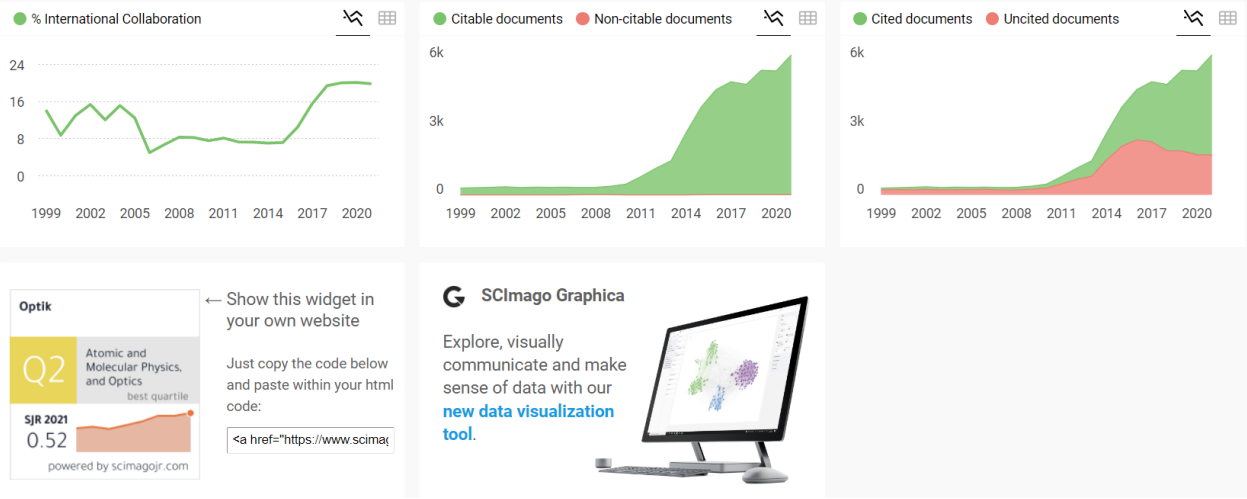



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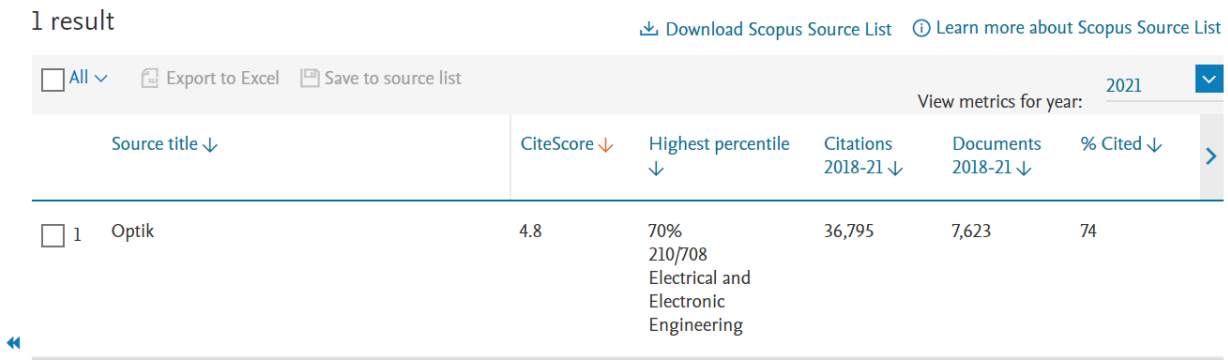


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