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Judul Jurnal Ilmiah (Artikel) : Platinum-free, carbon-based materials as efficient counter electrodes for dye sensitized solar cells

Penulis Jurnal Ilmiah/ Jumlah penulis : Widiyandari H. Prasetyo, A. Purwanto, A. Subagio, A. Hidayat, R./ 5 orang penulis

Status Pengusul : Penulis Anggota

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- a. Nama Jurnal : Japanese Journal of Applied Physics
- b. Nomor ISSN : 1347-4065
- c. Volume, no, bulan, tahun : Volume 57, Issue 6, June 2018, Article number 06800
- d. Penerbit : Japan Society of Applied Physics
- e. DOI artikel : (jika ada)
- f. Alamat web : <https://iopscience.iop.org/article/10.7567/JJAP.57.068001/meta>
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<b>Total = (100%)</b>	<b>39,8</b>	<b>39</b>	<b>39,4</b>

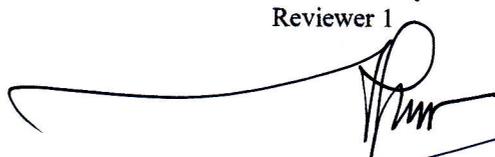
Reviewer II



Prof. Dr. Heri Sutanto, S.Si, M.Si  
NIP. 197502151998021001  
Unit Kerja: Departemen Fisika, Fakultas Sains dan Matematika UNDIP Semarang

Semarang, April 2020

Reviewer I



Prof. Dr. Muhammad Nur, DEA  
NIP. 195711261990011001  
Unit Kerja: Departemen Fisika, Fakultas Sains dan Matematika UNDIP Semarang

$$= 40\% \times 39,4$$

$$= 15,76$$

$$= 3,94$$

**LEMBAR  
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Judul Jurnal Ilmiah (Artikel) : Platinum-free, carbon-based materials as efficient counter electrodes for dye sensitized solar cells

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a. Kelengkapan unsur isi (10%)	4,00			4
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<b>Total = (100%)</b>	<b>40,00</b>			<b>39,8</b>
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Catatan Penilaian Artikel oleh Reviewer:

**1. Kesesuaian dan kelengkapan unsur isi jurnal:**

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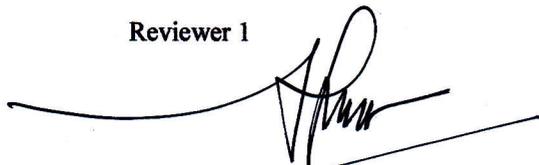
**3. Kecukupan dan kemutakhiran data/informasi dan metodologi:**

Referensi dan data mutakhir. Metode standar. Walaupun tidak eksplisit dalam sub artikel namun mudah diperoleh informasinya.

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Reviewer 1



Prof. Dr. Muhammad Nur, DEA

NIP. 195711261990011001

Unit Kerja: Departemen Fisika, Fakultas Sains dan Matematika UNDIP Semarang

**LEMBAR**  
**HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW**  
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c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%)	12,00			11,5
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00			11,5
<b>Total = (100%)</b>	<b>40,00</b>			<b>39</b>
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**3. Kecukupan dan kemutakhiran data/informasi dan metodologi:**

Data yg ditampilkan mutakhir, sesuai metode penelitian. Artikel didukung 21 ref. 05 85, 7% mutakhir. Snilarita 3%.

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Prof. Dr. Heri Sutanto, S.Si, M.Si

NIP. 197502151998021001

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Japanese Journal of Applied Physics  
Volume 57, Issue 6, June 2018, Article number 068001

## Platinum-free, carbon-based materials as efficient counter electrodes for dye-sensitized solar cells (Article)

Widiyandari, H.<sup>a</sup> ✉, Prasetio, A.<sup>b</sup>, Purwanto, A.<sup>c</sup>, Subagio, A.<sup>b</sup>, Hidayat, R.<sup>d</sup> 👤

<sup>a</sup>Department of Physics, Faculty of Mathematics and Natural Science, Sebelas Maret University, Surakarta, 57126, Indonesia

<sup>b</sup>Department of Physics, Faculty of Science and Mathematics, Diponegoro University, Semarang, 50275, Indonesia

<sup>c</sup>Department of Chemical Engineering, Faculty of Engineering, Sebelas Maret University, Surakarta, 57126, Indonesia

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### Abstract

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The electrocatalytic potential of carbon materials makes them the most viable candidate to replace Pt as a counter electrode (CE) in dye-sensitized solar cells (DSSCs). In this research, we report our study using graphite, CNT/graphite composite, CNT, and Pt-based CEs in DSSCs. The electrochemical impedance spectroscopy (EIS) measurement showed that the CNT-based CE (CNT-CE) has the lowest charge transport resistance ( $R_{ct}$ ) compared with graphite and the CNT/graphite composite. The photovoltaic performance measurement showed that the CNT-CE resulted in a short-circuit photocurrent density ( $J_{sc}$ ) of  $3.59 \text{ mA/cm}^2$  whereas the Pt-based CE (Pt-CE) resulted in a  $J_{sc}$  of  $2.76 \text{ mA/cm}^2$ . © 2018 The Japan Society of Applied Physics.

### SciVal Topic Prominence ⓘ

Topic: Solar cells | Dyes | Electrodes CEs

Prominence percentile: 99.583 ⓘ

### Indexed keywords

Engineering controlled terms:

Electrochemical impedance spectroscopy Electrodes Graphite Platinum Solar cells

Engineering uncontrolled terms

Carbon based materials Carbon material Counter electrodes Electrocatalytic

Electrochemical impedance spectroscopy measurements Photovoltaic performance

Short-circuit photocurrent densities Transport resistance

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Kim, H., Veerappan, G., Wang, D.H.

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Studies on alternate counter electrode materials for pt—free

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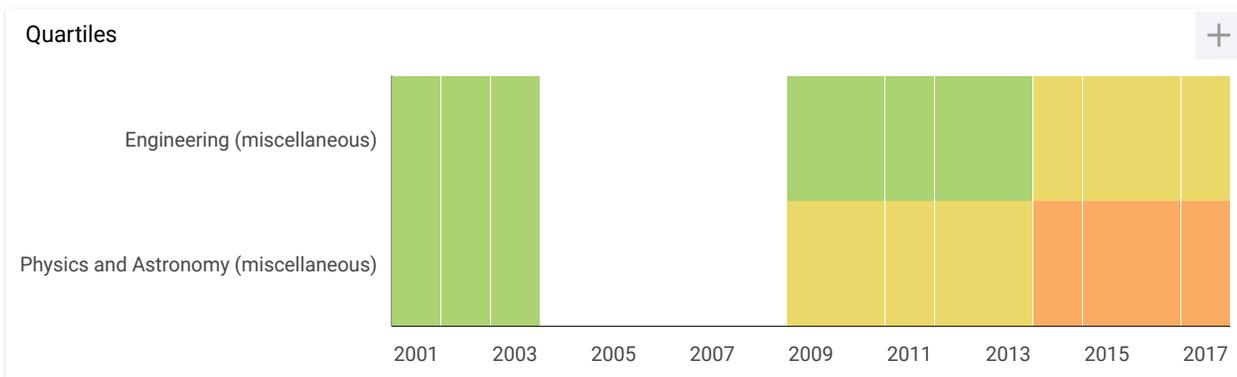


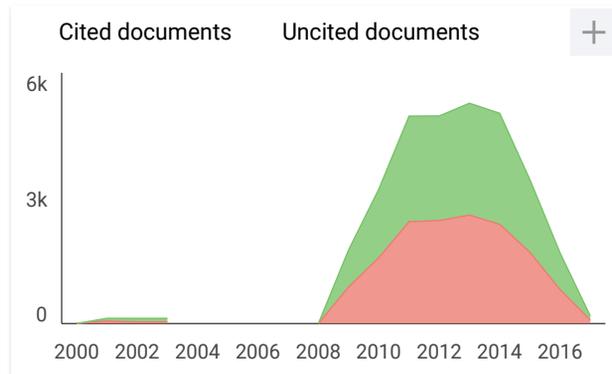
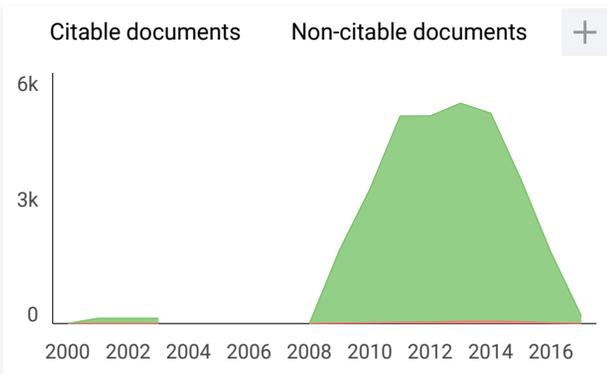
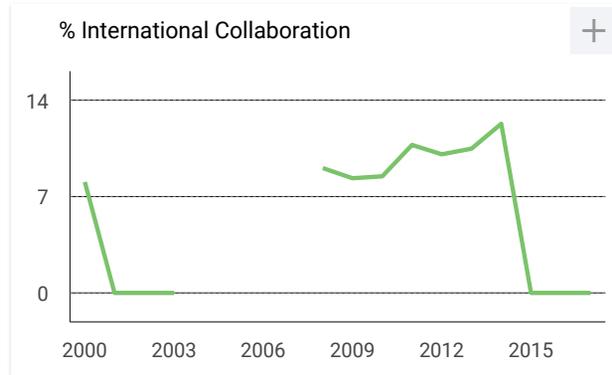
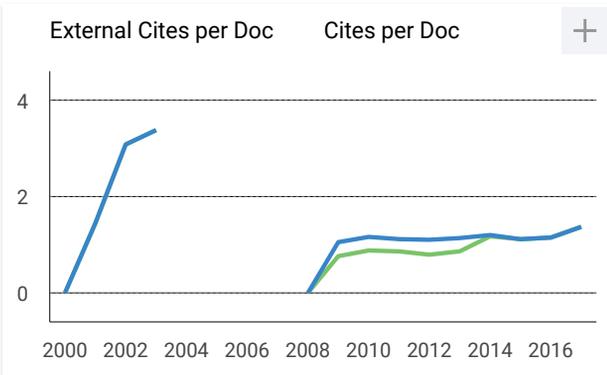
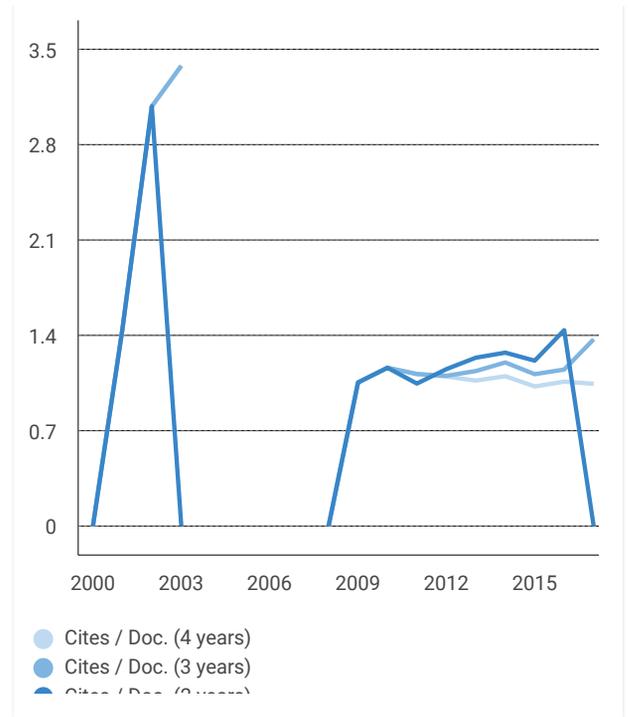
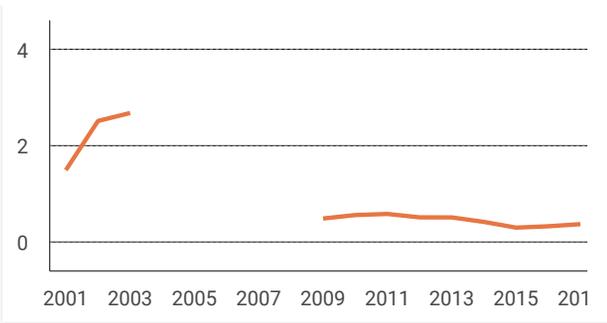
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<b>Publisher</b>	<a href="#">Japan Society of Applied Physics</a>
<b>Publication type</b>	Journals
<b>ISSN</b>	00214922
<b>Coverage</b>	1970, 1973-1982, 1997, 2000-2001, 2008-ongoing
<b>Scope</b>	The Japanese Journal of Applied Physics (JJAP) is an international journal for the advancement and dissemination of knowledge in all fields of applied physics. JJAP is a sister journal of the Applied Physics Express (APEX) and is published by IOP Publishing Ltd on behalf of the Japan Society of Applied Physics (JSAP). JJAP publishes articles that significantly contribute to the advancements in the applications of physical principles as well as in the understanding of physics in view of particular applications in mind. Subjects covered by JJAP include the following fields: Semiconductors, dielectrics, and organic materials Photonics, quantum electronics, optics, and spectroscopy Spintronics, superconductivity, and strongly correlated materials Device physics including quantum information processing Physics-based circuits and systems Nanoscale science and technology Crystal growth, surfaces, interfaces, thin films, and bulk materials Plasmas, applied atomic and molecular physics, and applied nuclear physics Device processing, fabrication and measurement technologies, and instrumentation Cross-disciplinary areas such as bioelectronics/photronics, biosensing, environmental/energy technologies, and MEMS
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