Judul Artikel	:	The Effect of Indium Doped SnO_2 Thin Films on Optical Properties Prepared by Sol-Gel Spin Coating Technique
Penulis	:	A. Doyan, Susilawati, S. Hakim, L. Muliyadi, M. Taufik dan Nazarudin
Nama Seminar/Konferensi/Simposium	:	Journal of Physics: Conference Series
Penyelenggara/Penerbit	:	IOP Publishing Ltd
Waktu/Tempat Pelaksanaan	:	12–13 Juli 2019, Yogyakarta, Indonesia
Halaman	:	012003-1 -012003-8
ISBN/ISSN	:	*ISSN: 1742-6596*
Web Prosiding	:	https://iopscience.iop.org/issue/1742-6596/1397/1
URL Dokumen	:	https://iopscience.iop.org/article/10.1088/1742-6596/1397/1/012005/pdf
DOI	:	http://doi.org/10.1088/1742-6596/1397/1/012005
LINK INDEX	:	https://www.scopus.com/authid/detail.uri?authorId=57205535848
Tanggal/Waktu	:	Semester Gasal 2019/2020
Satuan	:	1 Makalah/tahun
Volume Kegiatan	:	1

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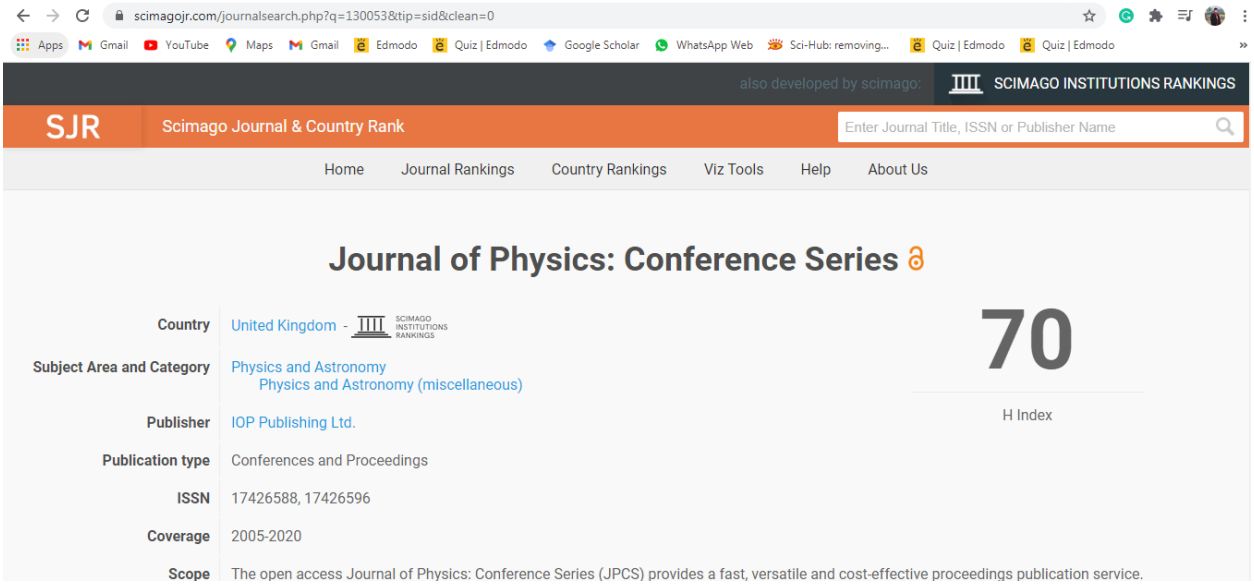

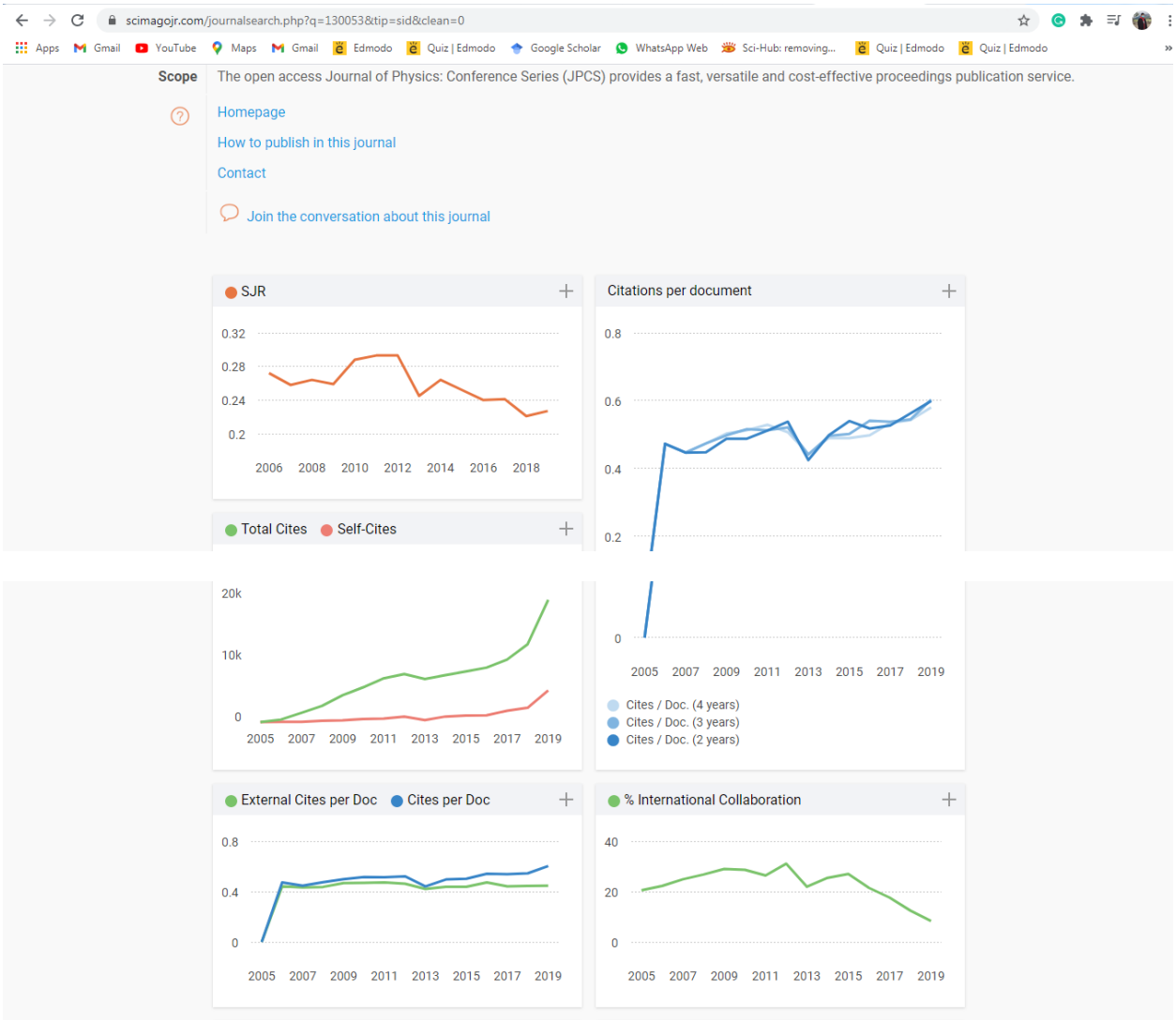

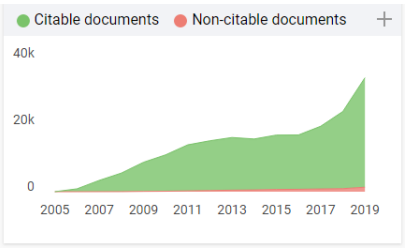
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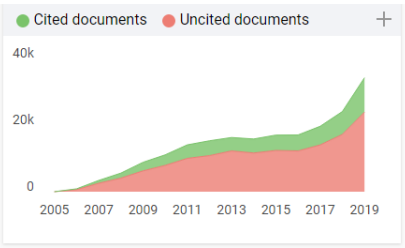
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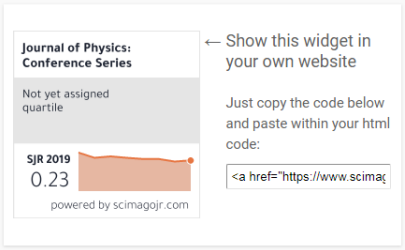
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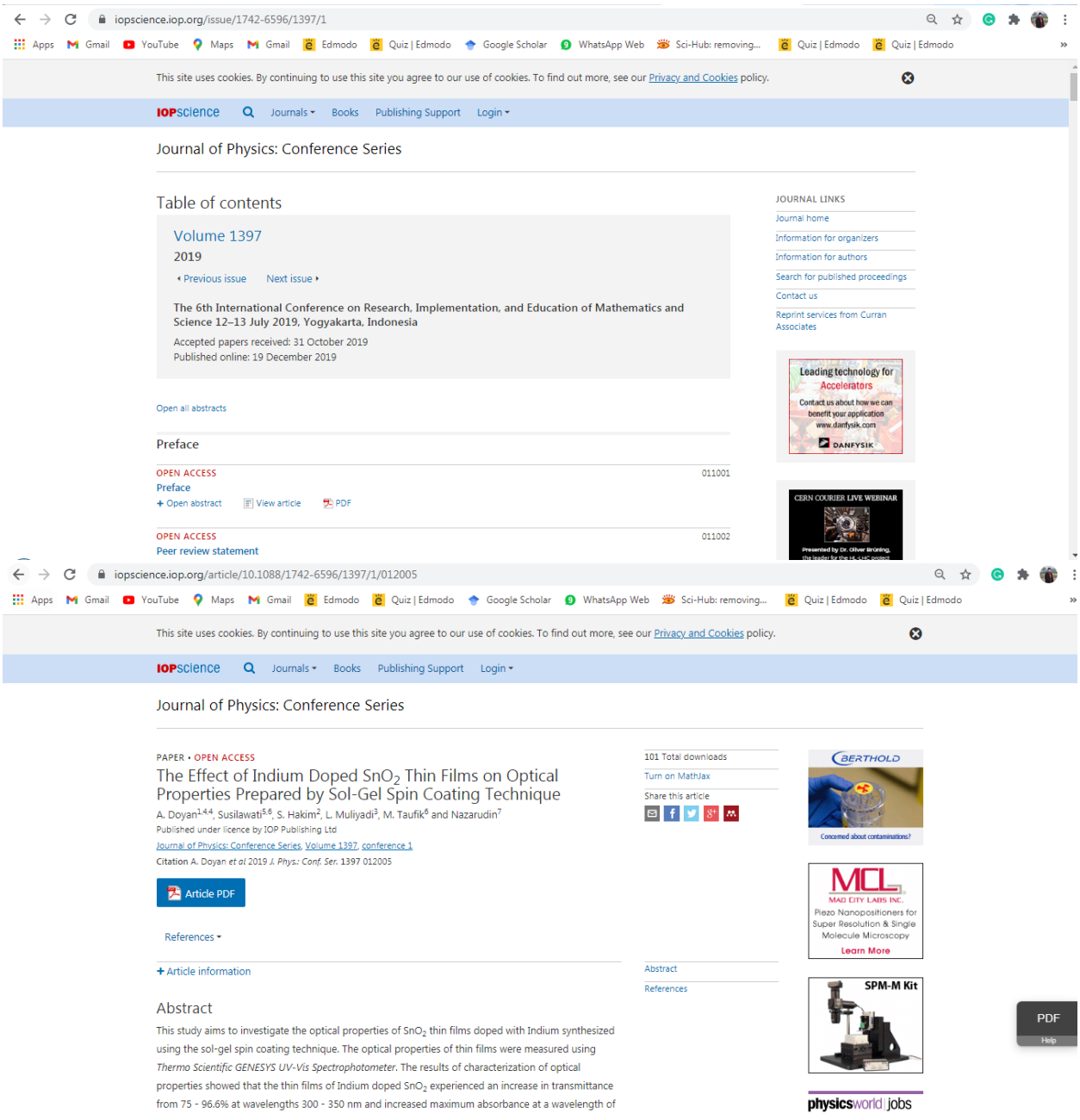

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The Effect of Indium Doped SnO_2 Thin Films on Optical Properties Prepared by Sol-Gel Spin Coating Technique

The Effect of Indium Doped SnO_2 Thin Films on Optical Properties Prepared by Sol-Gel Spin Coating Technique

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Abstract. This study aims to investigate the optical properties of SnO_2 thin films doped with Indium synthesized using the sol-gel spin coating technique. The optical properties of thin films were measured using *Thermo Scientific GENESYS UV-Vis Spectrophotometer*. The results of characterization of optical properties showed that the thin films of Indium doped SnO_2 experienced an increase in transmittance from 75 - 96.6% at wavelengths 300 - 350 nm and increased maximum absorbance at a wavelength of 300 nm from 3.19 - 4.32 with an increase in doping percentage. This shows that thin films absorbance the maximum wave at a wavelength of 300 nm. Increasing the percentage of doping causes the thin films of SnO_2 to experience a decrease in energy gap both in the direct energy gap of 3.64 - 3.57 eV and indirect energy gap i.e from 3.92 - 3.87 eV. The optical activation energy of the SnO_2 thin films decreased with increasing doping percentage from 2.91 - 2.35 eV. The results of this study indicate that SnO_2: In thin films is high-quality because it has high transmittance and low energy gap.

1. Introduction

The study of semiconductor materials has a significant contribution to the development of technology. Semiconductor materials are widely used as electronic devices. One of the semiconductor materials is tin oxide. Semiconductor SnO_2 is an N-type semiconductor material. As a development, semiconductor materials can be modified to micro-size to nano-size in the form of a thin film. Energy gap SnO_2 thin films is 3.60 - 3.98 eV [1, 2], the energy gap value is large enough for thin films of semiconductor material.

Modification of semiconductor materials into thin films makes the use of semiconductor materials more diverse. Some uses of semiconductor materials in the form of thin films such as solar cells, touch screens [3], and gas sensors [4].

The function of SnO_2 thin films will be more optimal to be used as an electronic device that has high quality, so doping is needed which is expected to reduce the energy gap so that electronic devices become more sensitive. Some of the doped of SnO_2 thin films have been studied such as Fluoride Dehydrate [5], Aluminum [6], Aluminum-Zinc [7], Cesium [8], Fluorine [9], and Indium [10].

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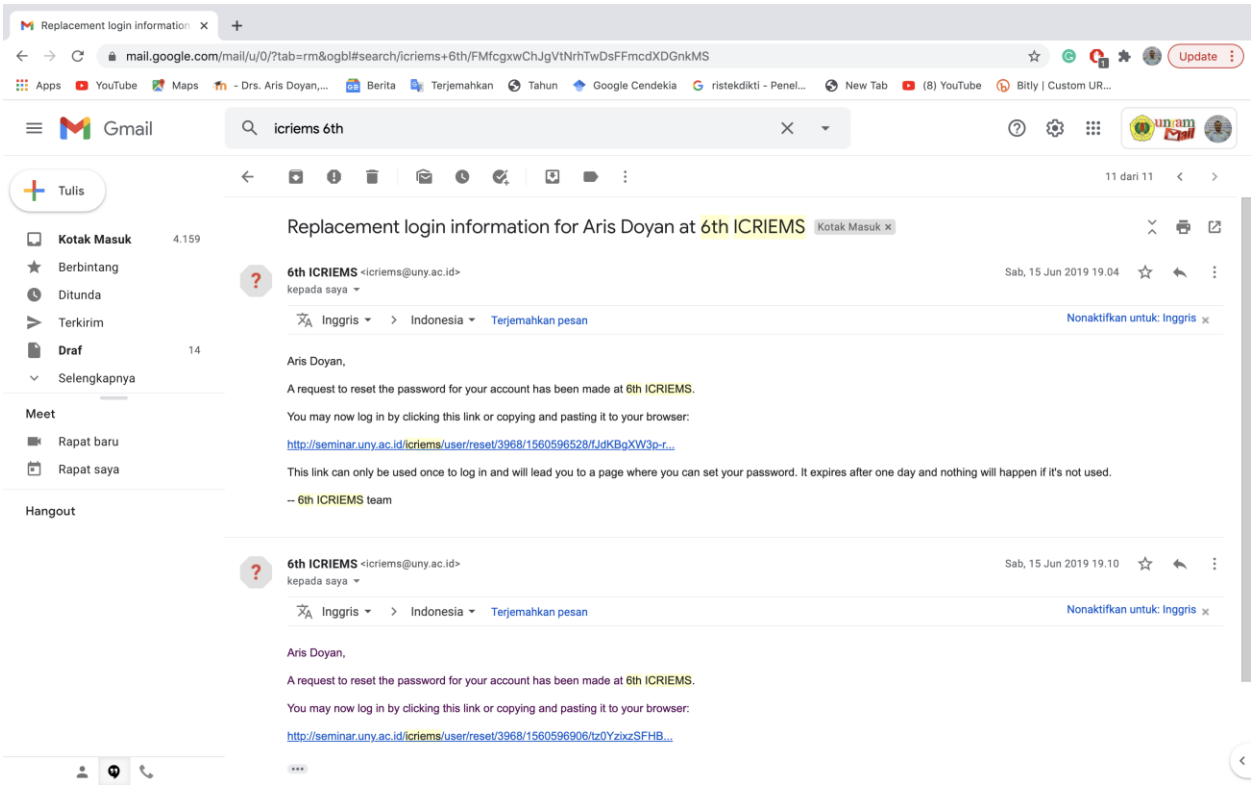

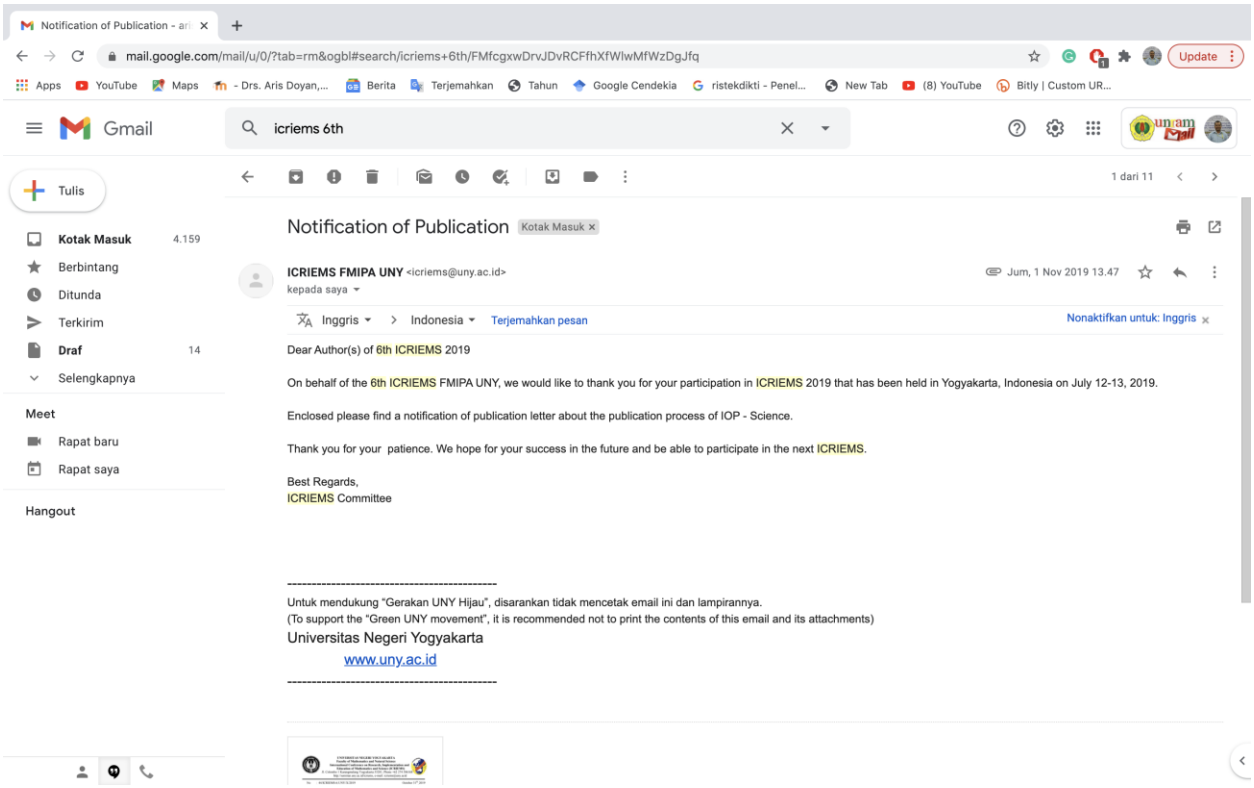

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No : 29/ICRIEMS-6.UNY/V/2019 June 17, 2019
Re : Acceptance Letter

Author (s) :

Aris Doyan

Dear Author (s)

On behalf of the 6th ICRIEMS Committee, Faculty of Mathematics and Natural Science and I would like to thank you for submitting your **full paper** for ICRIEMS 2019 with the theme "Integrating Science, Technology, Engineering, & Mathematics (STEM) and Education for Disaster Risk Reduction and Mitigation" and will be held in Yogyakarta, Indonesia on July 12-13, 2019.

I am pleased to inform you that your initial **paper** entitled**:**

The Effect of Indium Doped SnO_2 Thin Films on Optical Properties Prepared by Sol-Gel Spin Coating Technique

is accepted to be presented. If the reviewer has requested any revision, it must be revised.

Thank you for participating in ICRIEMS 2019. Please read the following important information about your participation in the conference in website: http://seminar.uny.ac.id/icriems/. We hope that you are able to attend the conference, and look forward to seeing you in Yogyakarta.

Conference Chair,

Dr. Restu Widiatmono
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