LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : PROSIDING

Judul Karya Ilmiah (Prosiding)	:	Fluorescence polarization method for detection of lard mixed with olive oil		
Nama/ Jumlah Penulis	:	5 Orang		
Status Pengusul	:	penulis ke-4		
Identitas Prosiding	:	a. Judul Prosiding	:	10th International Conference on Physics and Its Applications
		b. ISBN/ISSN	:	1742-6588, eISSN : 1742-6596
		c. Thn Terbit, Tempat Pelaks.	:	26 Agustus 2022, Conference
		d. Penerbit/Organiser	:	IOP Publishing Ltd.
		e. Alamat Repository/Web	:	https://iopscience.iop.org/article/10.1088/1742-6596/1825/1/012076/meta
		Alamat Artikel	:	https://iopscience.iop.org/article/10.1088/1742-6596/1825/1/012076/pdf
		f. Terindeks di (jika ada)	:	Scopus

Kategori Publikasi Makalah (beri ✓pada kategori yang tepat) : [√] *Prosiding* Forum Ilmiah Internasional
[ ] *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi prosiding (10%)	2,6	3	2,8
b. Ruang lingkup dan kedalaman pembahasan (30%)	8,8	9	8,9
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	8,6	9	8,8
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	8,7	8,9	8,8
Total = (100%)			29,3
Nilai untuk Pengusul : (40% x 29,3) / 4 = 2,93			

Semarang, 8 Maret 2023

Reviewer 1

Dr. Eng. Eko Hidayanto, S.Si., M.Si.
NIP. 197301031998021001
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

Reviewer 2

Prof. Dr. Heri Sutanto, S.Si., M.Si.
NIP. 197502151998021001
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

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Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional [√]	Nasional [ ]	
a. Kelengkapan unsur isi prosiding (10%)	3		2,6
b. Ruang lingkup dan kedalaman pembahasan (30%)	9		8,8
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9		8,6
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	9		8,7
Total = (100%)	**30**		**28,7**
Nilai Pengusul = (40% x 28,7) / 4 = 2,87			

Catatan Penilaian Paper oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Artikel telah ditulis seuai dengan format IOP Conference Series …….
   ……
   ……
   ……
2. **Ruang lingkup dan kedalaman pembahasan:**
   Pembahasan cukup bagus tetapi sebenernya masih bisa diperluas …….
   ……
   ……
   ……
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data/informasi dan metodologi termasuk mutakhir dan baik…….
   ……
   ……
   ……
4. **Kelengkapan unsur dan kualitas terbitan/ prosiding:**
   Kualitas terbitan cukup baik, IOP Publishing tahun 2020, terideks Scopus…….
   ……
   ……
   ……

Semarang, 3 Maret 2023
Reviewer 1

Dr. Eng. Eko Hidayanto, S.Si., M.Si.
NIP. 197301031998021001
Unit Kerja : Fisika
Bidang Ilmu: Fakultas Sains dan Matematika

LEMBAR
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		e. Alamat Repository/Web	:	https://iopscience.iop.org/article/10.1088/1742-6596/1825/1/012076/meta
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		f. Terindeks di (jika ada)	:	Scopus

Kategori Publikasi Makalah (beri ✓pada kategori yang tepat) : [√] *Prosiding* Forum Ilmiah Internasional
[ ] *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding		Nilai Akhir Yang Diperoleh
	Internasional [√]	Nasional [ ]	
a. Kelengkapan unsur isi prosiding (10%)	3		3
b. Ruang lingkup dan kedalaman pembahasan (30%)	9		9
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9		9
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	9		8,9
Total = (100%)	30		29,9
Nilai Pengusul = (40% x) / 4 =			

Catatan Penilaian Paper oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Artikel telah ditulis secara lengkap (judul, abstrak hingga kesimpulan) sesuai dengan standar penulisan prosiding Journal of Physics: Conference series. Topik artikel sesuai dengan scope jurnal yaitu aplikasi dibidang fisika.
2. **Ruang lingkup dan kedalaman pembahasan:**
   Lingkup isi artikel terkait metode polarisasi fluoresensi untuk mendeteksi lemak babi yang dicampur dengan minyak zaitun. Pembahasan sudah diungkapkan secara jelas dan komprehensif serta sudah mengkaitkan dengan hasil peneliti lain.
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Data hasil penelitian kategori memadai dan sesuai metodologi penelitian yang dilakukan. Hasil penelitian disajikan dalam 4 grafik yang disajikan secara baik dan jelas. Artikel telah disusun berdasarkan 14 referensi yang relevan dan kategori mutakhir. Kontribusi ilmiah dari artikel sangat baik dilihat dari uji kemiripan sebesar 5%.
4. **Kelengkapan unsur dan kualitas terbitan/prosiding:**
   Prosiding Journal of Physics: Conference series dengan publisher IOP cukup konsisten dalam menjaga kualitas terbitan Prosiding terindeks Scopus..

Semarang, 23 Februari 2023
Reviewer 2

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Unit Kerja : Fisika
Bidang Ilmu: Fakultas Sains dan Matematika

ICOPIA 2020

International Conference on Physics and Its Applications

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Salsabila Armany

as

Speaker

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Fluorescence polarization method for detection of lard mixed with olive oil

Salsabila A. ; Azam M. ; Sugito H. ; Soesanto Q.M.B. ; Firdausi K.S.
Save all to author list

[a] Department of Physics, Faculty of Sciences and Mathematics, Diponegoro University, Jl. Prof. Soedarto SH, Semarang, 50275, Indonesia

Abstract

This study is based on fluorescence polarization as a potential alternative method for an investigation of contamination of lard in food. The purpose of this study was to obtain the characteristic of fluorescence polarization in olive oil samples mixed with lard. The characteristics of fluorescence polarization were obtained by measuring changes in the polarization of light using a linearly polarized green laser pointer and observed in the direction of the scattering angle of 90° for various direction of electric field of the laser. The results showed that the critical angle of direction of electric field of the laser and the average polarization change increase as the concentration of lard is raised. It could be due by additional

asymmetric triglycerides and molecular orientation that play an important role in the sample. This result shows that additional mixture of lard in olive oil can be detected, and this method seems to be developed for the detection of low concentrations of lard contamination.

Indexed keywords

SciVal Topics

Metrics

Funding details

References (14)

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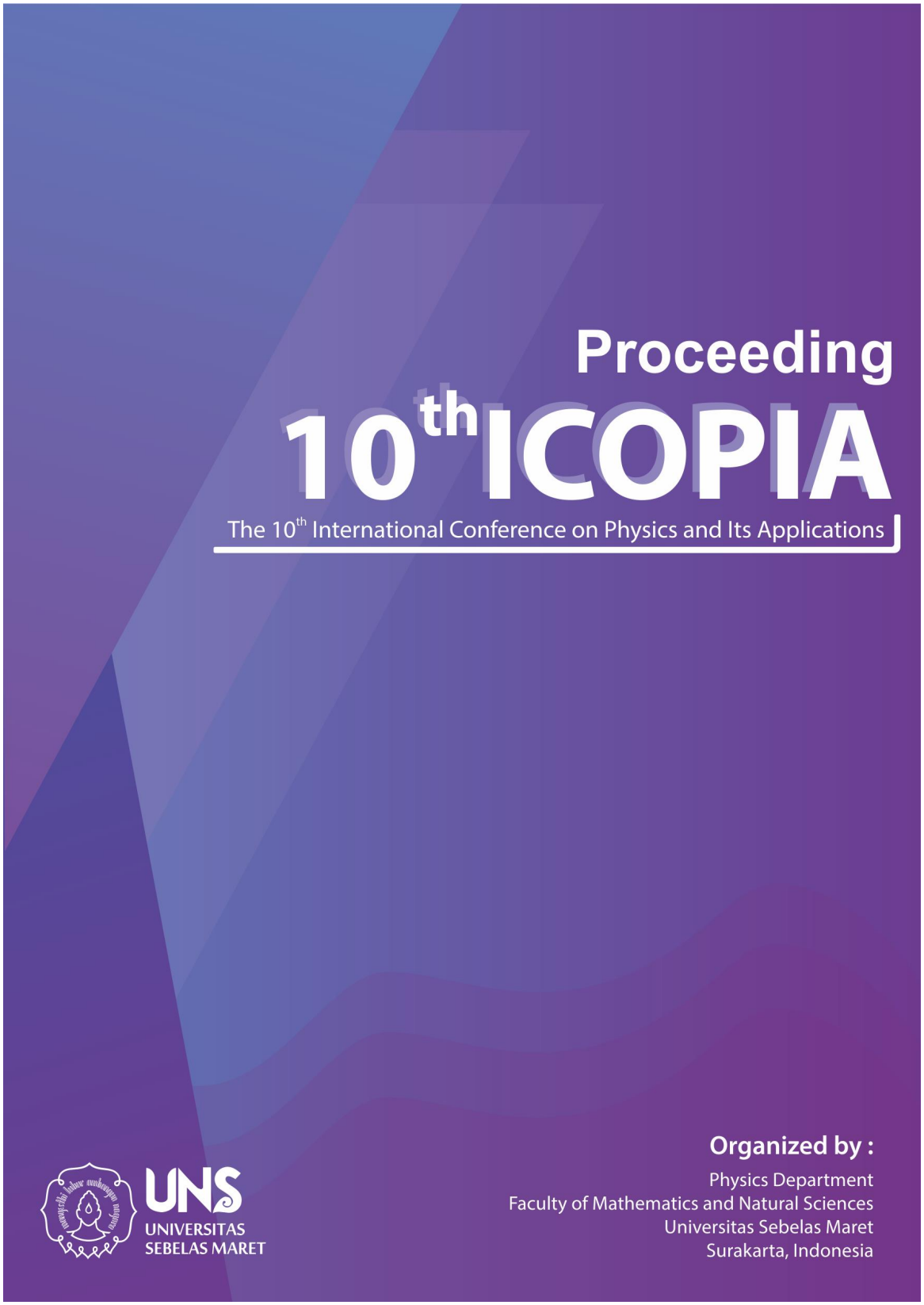

ICOPIA 2020

The 10th International Conference on Physics and Its Applications
Universitas Sebelas Maret, Surakarta, Central Java, Indonesia

Proceeding

10th International Conference on Physics and Its Applications (ICOPIA)
26 August 2020, Surakarta, Indonesia

Preface

International Conference on Physics and Its Applications (ICOPIA) is a biannual conference, started in 2001. This year of 2020, ICOPIA is the tenth one. This conference is mainly supported by Department of Physics, Universitas Sebelas Maret, Indonesia.

ICOPIA is a forum for presenting and discussing current research in physics and its applications. Varied studies about material physics, optics, geophysics, instrumentation, magnetics and theoretical physics have been presented in the 10th ICOPIA. All the papers were presented orally.

The keynote presentations by qualified speakers have been delivered in this conference. The keynote presentation included Rutile-Phased TiO2 Nanostructured Towards Electronic Devices Application, Deep Learning for Biomedical Application, Control of nanoparticle-size in cobalt ferrite system and Improvement of Functional Oxide Properties for Applications. The keynotes speakers were from Université du Littoral Côte d'Opale, France, University of Technology Sydney, Australia, Universiti Tun Hussein Onn Malaysia and Universitas Sebelas Maret, Indonesia.

This proceeding contains the papers presented in ICOPIA 2020. The papers are divided into sections: Acoustic, Computational Physics, Geophysics, Instrumentation, Material Physics, Optics, Theoretical Physics, and other topics related to Physics. This structure is made so that readers are easier to find an article in this proceeding.

We would like to thank to all the participants attending this conference and also to the committees for their contribution to this high-level conference and its overall success. We also would like to thank to the reviewers for their positive contribution to maintain the quality of the articles presented in this conference.

Nuryani, Ph.D
General Chair of ICOPIA2020

ICOPIA 2020

The 10th International Conference on Physics and Its Applications
Universitas Sebelas Maret, Surakarta, Central Java, Indonesia

10th International Conference on Physics and Its Applications (ICOPIA)

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Development of electro-optics method for evaluation of quality degradation of some vegetable oils

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Fluorescence polarization method for detection of lard mixed with olive oil

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Mohtar Yunianto, Fathu Qaulan Tsaqiila, Fuad Anwar and Teguh Endah Saraswati

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The Comparison of Optical Properties Between $Ba_{0.25}Sr_{0.75}TiO_3$ and $Ba_{0.75}Sr_{0.25}TiO_3$ Thin Films As The Light Sensors Application

F Faridawati, AY Rohedi, Eko Minarto, G Yudoyono, T Widihartanti, YH Pramono and Nely Yuningtyas

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Other Topics of Physics

OPEN ACCESS 012080

Calibration of Fourier Transform Spectrometer with Blackbody Temperatures Optimally Determined

Achmadi A[1,3], Lee J S[1,2], Lim J S[1,2], and Park S N[1,2]

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[2] Korean Research Institute for Standard and Science, Daejeon, South Korea
[3] Center for Research and Human Resources Development, National Standardization Agency of Indonesia, Tangerang Selatan, Indonesia

Email: aditya@bsn.go.id, snpark@kriss.re.kr

Abstract. Spectral responsivity calibrating of Fourier Transform Spectrometer (FTS) is essential for eliminating its systematic error in a ground-based solar observation system. Conventionally the calibration is being done by the three-temperature blackbody method, which gives a spectral responsivity curve of the FTS under calibration in addition to the respective temperatures of the blackbody. It is an advantage that the method does not require pre-information on the blackbody temperatures. However, a combination of three temperatures remains a question in terms of the calibration accuracy. In this paper, the method is applied to a high level of radiance calibration at a wavenumber range from 2000 cm-1 to 8000 cm-1. We propose a technique which determines an optimal combination of the three temperatures in the blackbodies to improve the calibration accuracy of the FTS. Experiments were carried out using four arbitrary combinations of blackbody temperatures settings and an optimal combination of the temperature settings. The result deviation of the optimal combination is less than 0.5% and 3% for measured temperature and spectral radiance respectively, which is better than the arbitrary temperature combinations.

1. Introduction

A Fourier transform spectrometer (FTS) is a spectrum analytical instrument that is based on the interferometric method; an FTS can be used to provide accurate measurements in radiometric units at high spectral resolution, including radiance or irradiance measurements, emissivity or reflectivity measurements, and ground-based measurements of transmitted solar radiance to determine the amount of a particular atmospheric gas [1]. Therefore, these spectrometers are widely used in many measurement applications [2]. Calibration of Fourier transform spectrometer (FTS) is important to eliminate the systematic error due to the different characteristics of each instrument and make the measured spectra can be standardized [3], moreover in atmospheric measurement it's also can improve the accuracy of retrievals codes calculation [4].

Generally there are two group method are being use for FTS calibration; the two blackbody-temperatures and the three blackbody-temperatures method [5][6][7][8]. All methods needs a blackbody light source at certain temperature as the reference to calculate the responsivity curve of the FTS as the calibration result. The two temperature method is more simple compare to another method

Numerical solution of the schrödinger equation with periodic coulomb potential

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Abstract. This paper investigates the energy spectrum of a periodic one-dimensional Coulomb potential. The Schrödinger equation is solved numerically by our newly developed filter method (*Phys. Rev E* **96**(3), 033302 (2017)). We observe that the energy spectrum can be obtained with a limited number of lattice. The results show the presence of an energy band structure as a function of lattice width and edge width. The comparison with the other potential model is also discussed.

1. Introduction

Along with the rapid development of technology, there is an increasing need for the availability of materials with specific mechanical, optical, electrical, and magnetic properties. Because the properties of a material largely depend on its band structure, one of the most important problem in solid-state physics is determining the electronic states in solids [1-2]. This problem is usually solved by assuming a periodic potential for a single electron, which represents a simplified model for a crystal structure [3-4]. More specifically, much theoretical research has focused on the time-independent behavior of the electron in a one-dimensional (1D) periodic potential, which can be obtained by solving the Schrödinger equation for the corresponding case.

Complicated mathematical techniques are often required to find the analytical solutions of the Schrödinger equation for particular potentials. For some cases of potentials, the analytical solutions are even not yet available. Therefore, numerical methods become realistic choices to solve the problem. In this regard, we have developed a numerical method for solving the Schrödinger equation, known as the filter method [5]. The filter method enables us to obtain the eigen-energy and eigen-function of any given potential without the requirement to define any boundary conditions.

The filter method has been applied to solve the Schrödinger equation for a single-particle in single potentials such as an electron in the Coulomb potential and an electron in the harmonic oscillator potential, with great success [5]. Furthermore, this method is also applied to solve multi-particle systems, such as electrons in a helium atom, where acceptable results can be reproduced with precision up to the 9^{th} decimal. Recently, we applied the filter method to solve periodic 1D potential problems, such as a periodic harmonic potential [6] and the Kronig-Penney model [7-8]. In both cases, we observed the energy band structures, as expected from periodic potentials. The numerical results for the Kronig-Penney model well agree with the analytical ones. On the other hand, we have difficulty for checking the results of the periodic harmonic potential due to the absence of the analytical solutions.

Another attractive challenge is the implementation of the filter method for a periodic Coulomb potential. In implementation, the soft-core Coulomb is employed to avoid singularity [9]. The soft-core

Effects of Nd and Mn Co-dopant on the Micro Structure and Optical Properties of $BiFeO_3$ Thin Films Elaborated by Chemical Solution Deposition (CSD)

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Abstract. Bismuth Ferrite ($BiFeO_3$), Neodymium (Nd) and Manganese (Mn) ($Bi_{1-x}Nd_xFe_{1-y}Mn_yO_3$) with (x, y = 0.03, 0.03; 0.03, 0.05; 0.05, 0.03; 0.05, 0.05) were prepared by Chemical Solution Deposition (CSD) method at annealing temperatures of 550 ^oC. The effects of addition of Nd and Mn co-dopants in the $BiFeO_3$ on the crystal structure and optical properties are presented. The results of X-Ray Diffraction (XRD) characterization showed that the addition of Nd and Mn co-dopants leads the diffraction angles to shift to smaller angles and to decrease the crystal size. Doped-$BiFeO_3$ samples were characterized by UV-vis in the wavelength range of 200 nm- 800 nm. The transmittance value of $Bi_{1-x}Nd_xFe_{1-y}Mn_yO_3$ samples decreased in the wavelength range of 400-800 nm (UV light). The addition of Nd and Mn co-dopants to $BiFeO_3$ caused light dispersion and refractive index to decrease.

1. Introduction

The global energy crisis is one of the challenges for the electric industry sector to find a renewable energy source. Therefore, the research has been done using materials that can be used for photovoltaic solar cells (PV) as a renewable energy source [1]. Bismuth Ferrite ($BiFeO_3$) is member of ferroelectric materials that have interesting characteristics [2]. One of these characteristics is that Bismuth Ferrite has a bandgap energy of 2.61 eV [3]. $BiFeO_3$ is a ferroelectric material with T_C ~1103K, and $BiFeO_3$ includes antiferromagnetic type-G (T_N ~643K) [4]. $BiFeO_3$ is a multiferroic material that can exhibit a high remanent polarization value (Pr= 100 μC / cm^2) [5].

$BiFeO_3$ material has a perovskite crystal structure distorted to rhombohedra with group space R3c [6]. $BiFeO_3$ material can be modified using the doping method. The doping method can be divided into atomic doping A (Bi), atomic doping B (Fe), and atomic co-doping A-B. Atomic position A can be doped using elements Pr, La, and Nd [7], [8], [9]. Atomic position B can be doped using elements Cr, Mn [10], [11]. In this research, BiFeO3 was modified using Nd and Mn doping. The expectation from this addition of Nd and Mn doping to $BiFeO_3$ is to improve optical properties like its bandgap value (2.72 eV) and its refractive index value (2.59) [12].

There are several methods of $BiFeO_3$ film synthesis, such as pulsed laser deposition [13], magnetron sputtering [4], Chemical Solution Deposition (CSD) [14]. Among those methods, CSD has the advantage of easy composition control in a high-quality film and micro chemical homogeneity,

Photoluminesence study of undoped GaAs at temperatures 300 K and 77 K

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Abstract. This work presents an experimental study of photoluminescence spectra from GaAs thin layer at temperature 300 K and 77 K. PL spectra were used to investigate the characteristics of the material, such as the photon energy, gap energy, and the type of radiation transition. The apparatus used in the experiment are green laser with a wavelength of 532.0 nm, laser power supply, 500 mm focus lens, ocean optics USB 2000 spectrometer, fiber optic cable, USB cable, and the computer software installed ocean view and origin pro. The characterization was carried out at temperatures of 300 K and 77 K with power variation in the range 40 mW - 150 mW. The emitted spectrum was analyzed by observing the wavelength and calculating the photon energy and the gap energy. The results showed that laser power variation does not affect the emitted wavelength. However, it is affected by temperature. The emitted wavelength is 840 nm at 300 K and 790 nm at 77 K. The value of gap energy at 300 K is 1.422 eV while at temperature 77 K is 1.519 eV. The photon energy at temperatures 300 K and 77 K were 1.465 eV and 1.560 eV, respectively. The type of transition is a band-to-band transition at 300 K and Free Exciton (FE) at 77K. These results are consistent with existing theories, so the characterization of undoped GaAs has done successfully.

1. Introduction

Direct semiconductor such as GaAs has different electrical and optical properties compared to silicon[1]. GaAs is relatively insensitive to overheating because it has wider bandgap energy and tends to make less noise on electronic circuits, especially at high frequencies. The preparation of GaAs sample in this experiment was grown by *Molecular Beam Epitaxy* (MBE). The growth of layers from the molecular beam epitaxy is almost independent of the melting point, so it is possible to grow GaAs to form hetero-related relationships. The hetero-structure formed in GaAs material with other materials can be used for quantum device[2-4]. GaAs-based quantum well structures have the potential for laser applications that can emit infrared wavelengths[5, 6].

The properties of insulators or conductors of GaAs semiconductor materials can be observed through their characteristics[7]. Photoluminescence (PL) as non-destructive methods is a useful technique for observing the electrical properties of GaAs. The technique is used without contact and does not damage the material[8]. The FWHM (*Full Width at Half Maximum*) of PL spectrum can be used to analyze the types of radiation transition and bandgap, that might be useful for investigating carrier recombination that is a radiative recombination[9, 10].