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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL ILMIAH

Judul Artikel Ilmiah : Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP)
 Nama Penulis : **Harto Tanujaya**, Hirofumi Shintaku, Dai Kitagawa, Adianto, Susilodinata & Satoyuki Kawano
 Jumlah Penulis : 6 (enam)
 Status Pengusul : Penulis Pertama
 Identitas Buku Ilmiah : a. Nama Jurnal : Journal of Engineering and Technological Sciences
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 c. Vol. No. Bln. Th. : No.1, Volume 45, Januari 2013
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 e. Jumlah halaman : 12 halaman
 f. Alamat Web Jurnal : <http://journals.itb.ac.id/index.php/jets/article/view/622/0>
 g. DOI Artikel : <http://dx.doi.org/10.5614%2Fj.eng.technol.sci.2013.45.1.5>

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(beri (√) pada kategori yang tepat)

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Ruang lingkup dan kedalaman pembahasan (30%)	93%x30% x 40					11,16
Kecukupan & kemutakhiran data/informasi dan metodologi (30%)	92%x30% x 40					11,04
Kelengkapan unsur & kualitas penerbit (30%)	95%x30% x 40					11,4
Nilai <i>peer</i> Maksimal (100%)	40					37,2
Kontribusi Pengusul; (nilai akhir <i>peer</i> x bobot penulis pertama) = $37,2 \times 60\% = 22,32$						22,32
Komentar/Usulan Peer Review: (Terlampir hal. 2)	1. Tentang kelengkapan dan kesesuaian unsur; 2. Tentang ruang lingkup dan kedalaman pembahasan; 3. Kecukupan dan kemutakhiran data/informasi dan metodologi; 4. Kelengkapan unsur dan kualitas penerbit; 5. Indikasi Plagiasi; 6. Kesesuaian Bidang Ilmu: <i>Terlampir</i>					

Jakarta, 18.12.2019
 Penilai I



(Prof. Dr. Ir. Agustinus Purna Irawan)
 NIDN/NIP : 0328087102 / 10398021
 Jabatan/Pangkat/Bidang Ilmu: Professor/IVC/Teknik Mesin
 Unit Kerja: Fakultas Teknik – Universitas Tarumanagara

KOMENTAR
PEER REVIEW

1. Tentang kelengkapan dan kesesuaian unsur:

Artikel dengan judul **Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP)**, ditulis secara benar sesuai dengan standar penulisan artikel ilmiah yang memuat pendahuluan, metode/peralatan yang digunakan, pengambilan data dan data, analisa dan kesimpulan.

2. Tentang ruang lingkup dan kedalaman pembahasan:

Artikel dengan judul **Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP)**, membahas studi kasus secara eksperimental mengenai getaran sebuah membran untuk trapezoidal ABMP dengan spesifik dan mudah dipahami.

3. Kecukupan dan kemutakhiran data/informasi dan metodologi;

Metodologi terstruktur dan jelas, data dan referensi yang diambil up to date.

4. Kelengkapan unsur dan kualitas penerbit:

Editorial board dan reviewer untuk Jurnal "**Journal of Engineering and Technological Sciences**" jelas dan terstruktur dan dapat diakses online. Diterbitkan oleh ITB dan dapat dilacak melalui daring, bereputasi, terindeks oleh **Scopus dan berimpact factor, Q2, dengan SJR (2018) 0,21, dan H index 10**. Jurnal ber ISSN/ISBN.

5. Indikasi Plagiasi:

Artikel dengan judul **Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP)** yang diterbitkan oleh ITB Journal Bandung, dan dapat dibaca secara daring melalui <http://journals.itb.ac.id/index.php/jets/article/view/622/0>, dan DOI <http://dx.doi.org/10.5614%2Fj.eng.technol.sci.2013.45.1.5> tidak ditemukan indikasi plagiasi dengan tingkat kesamaan menggunakan software **Turnitin sebesar 6 %**.

6. Kesesuaian Bidang Ilmu:

Artikel tersebut membahas tentang studi pendekatan mekanika pada getaran sebuah membran dan ada Linieritas keilmuan dengan pengusul.

Jakarta, 18.12.2019
Penilai I



(Prof. Dr. Ir. Agustinus Purna Irawan)
NIDN/NIP : 0328087102 / 10398021
Jabatan/Pangkat/Bidang Ilmu: Professor/IVC/Teknik Mesin
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Kelengkapan dan kesesuaian unsur isi <i>prosiding</i> (10%)	4					3,76
Ruang lingkup dan kedalaman pembahasan (30%)	12					11,4
Kecukupan & kemutakhiran data/informasi dan metodologi (30%)	12					11,04
Kelengkapan unsur & kualitas penerbit (30%)	12					11,64
Total = 100%	40					37,84
Kontribusi Pengusul; (nilai akhir <i>peer</i> x bobot penulis pertama) = 37,84 x 60% = 22,704						22,704
Komentar/Usulan <i>Peer Review</i> :	1. Tentang kelengkapan dan kesesuaian unsur: 2. Tentang ruang lingkup dan kedalaman pembahasan; 3. Kecukupan dan kemutakhiran data/informasi dan metodologi; 4. Kelengkapan unsur dan kualitas penerbit: 5. Indikasi Plagiasi: 6. Kesesuaian Bidang Ilmu: <i>Terlampir</i>					

Jakarta, 11-11-2019
 Penilai

(Dr. Ir. M. Sobron Yamin L., M.Sc.)
 NIDN/NIP : 0114056705 / 10311009
 Jabatan/Pangkat/Bidang Ilmu: Lektor Kepala/IV/Teknik Mesin
 Unit Kerja: Fakultas Teknik – Universitas Tarumanagara

<p>KOMENTAR PEER REVIEW</p>	<p>1. Tentang kelengkapan dan kesesuaian unsur:</p> <p>Artikel Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP), ditulis sesuai dengan kaidah penulisan artikel ilmiah yang meliputi pendahuluan, metode/alat, data dan analisa serta kesimpulan.</p> <p>2. Tentang ruang lingkup dan kedalaman pembahasan:</p> <p>Artikel Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP), membahas studi kasus secara eksperimental mengenai getaran sebuah membran untuk trapezoidal ABMP dengan kedalaman pembahasan yang spesifik.</p> <p>3. Kecukupan dan kemutakhiran data/informasi dan metodologi;</p> <p>Data yang diambil dan digunakan untuk analisa dan referensi tergolong baru dan mutakhir, dengan susunan metodologi yang baik.</p> <p>4. Kelengkapan unsur dan kualitas penerbit:</p> <p>Editor dan reviewer Jurnal "Journal of Engineering and Technological Sciences" tersusun dan terorganisir, ber ISSN/ISBN dan dapat diakses online. Diterbitkan oleh ITB dan dapat dilacak melalui daring, bereputasi, terindeks oleh Scopus dan berimpact factor, Q2, dengan SJR (2018) 0,21, dan H index 10.</p> <p>5. Indikasi Plagiasi:</p> <p>Artikel Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP) diterbitkan oleh ITB Journal Bandung, dan dapat dibaca secara daring melalui http://journals.itb.ac.id/index.php/jets/article/view/622/0, dan DOI http://dx.doi.org/10.5614%2Fj.eng.technol.sci.2013.45.1.5 tidak ditemukan indikasi plagiasi.</p> <p>6. Kesesuaian Bidang Ilmu:</p> <p>Artikel tersebut membahas tentang studi pendekatan mekanika pada getaran sebuah membran dan ada kesesuaian dan linieritas keilmuan dengan pengusul.</p>
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Jakarta, 14-11-2019
Penilai I

(Dr. Ir. M. Sobron Yamin L., M.Sc.)

NIDN/NIP : 0114056705 / 10311009

Jabatan/Pangkat/Bidang Ilmu: Lektor Kepala/IV/Teknik Mesin

Unit Kerja: Fakultas Teknik – Universitas Tarumanagara



Experimental and Analytical Study Approach of Artificial Basilar Membrane Prototype (ABMP)

Herio Tanujaya¹, Harofumi Shiota², Dai Kitagawa³, Adianto¹, Susukidinata¹ & Setyuki Kawano⁴

¹Mechanical Engineering Department, Faculty of Engineering, Tirtayasa University, Jalan Lejen, S. Parana No. 1, Jakarta 11440, Indonesia
²Faculty of Medicine, Tirtayasa University,
Jalan Lejen, S. Parana No. 1, Jakarta 11440, Indonesia

³Mechanical Science and Biomechanical Department, Graduate School of Engineering Science, Osaka University, Machikaneyama-cho 1-3, Toyonaka, Osaka 560-8531, Japan
⁴Email: har.tan@yaho.com

Abstract. In this research, we have developed, fabricated, tested, and analyzed an artificial basilar membrane prototype (ABMP), which works using sinusoidal waves of various frequencies. The design of the prototype has a trapezoidal shape with a length of 20 mm and a width of 2 to 4 mm. The research was carried out experimentally and analytically. Experimentally, the ABMP's vibration was measured using a laser Doppler vibrometer (LDV) and a function generator to generate various frequencies. The analytical approach is discussed based on the Weizel-Kraiser Brillouin method (WKB). The results show that resonance frequencies can be reached within the range of human hearing, between 20 Hz to 20 kHz.

Keywords: ABMP, cochlea, frequency, frequency selectivity, PVDF, resonance, vibrating amplitude, WKB.

1 Introduction

The ears are a component of the human auditory system. Hearing impairment can be brought about by many causes. Sensorimotor hearing loss is one of them. Usually, in medicine a cochlear implant (CI) or hearing aid (HA) is used to assist the patient who suffers from deafness. In this paper, we discuss an artificial basilar membrane prototype (ABMP) using a piezoelectric membrane made of polyvinylidene fluoride (PVDF). The function of the cochlea in the human auditory system is not only to convert acoustic sound to electrical signals but also frequency selectivity. The biological basilar membrane, which is a resonator in the cochlea, plays a prominent role in frequency selectivity. In this experiment, we report the development of a fully self-contained artificial cochlea, the aforementioned ABMP. The acoustic sensor which is reported in this paper realizes frequency selectivity in the air. Normal humans can hear sounds in the frequency range of 20 Hz to 20 kHz.

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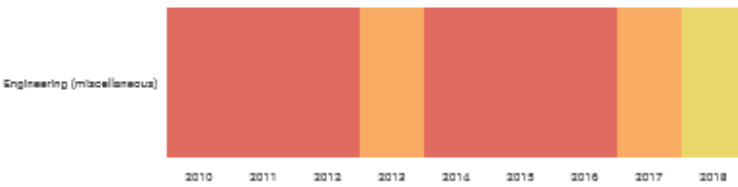
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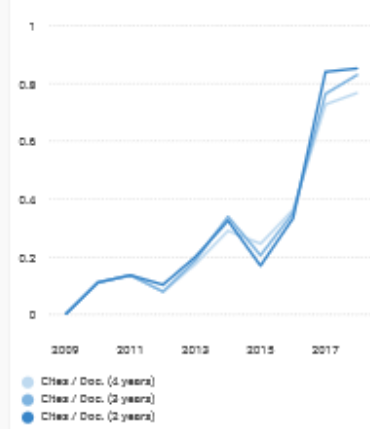
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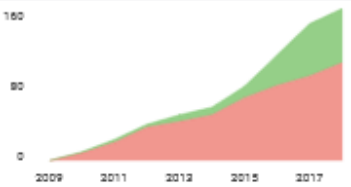
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Starting from Vol. 35, No. 1, 2003, full articles published are available online at <http://journal.itb.ac.id>, and indexed by Scopus (2018:Q2), Index Copernicus, Google Scholar, DOAJ, The Elektronische Zeitschriftenbibliothek EZB by University Library of Regensburg, EBSCO Open Science Directory, Ei Compindex, Chemical Abstract Service (CAS), Zurich Open Repository and Archive Journal Database, Emerging Sources Citation Index and Indonesian Publication Index.

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