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

Judul Karya Ilmiah (Prosiding)	:	Morphology and Degradation Kinetics of N-Doped TiO2 Nano Particle Synthesized Using Sonochemical Method		
Nama/ Jumlah Penulis	:	5 orang		
Status Pengusul	:	Penulis ke-1		
Identitas Prosiding	:	a. Judul Prosiding	:	Solid State Phenomena
		b. ISBN/ISSN	:	1662-9779
		c. Thn Terbit, Tempat Pelaks.	:	2017, Singapore
		d. Penerbit/Organiser	:	Trans Tech Publications
		e. Alamat Repository/Web	:	https://www.scientific.net/SSP.266.95
		Alamat Artikel	:	https://doi.org/10.4028/www.scientific.net/SSP.266.95
		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%)	3	3	3
b. Ruang lingkup dan kedalaman pembahasan (30%)	7.5	8.5	8
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	8	9	8,5
d. Kelengkapan unsur dan kualitas penerbit (30%)	9	8.5	8,75
Total = (100%)			**28,25**
Nilai untuk Pengusul : 60% x 28,25 = 16,95			

Semarang, 4 Agustus 2022

Reviewer 1

Prof. Dr. Drs. Wahyu Setia Budi, M.S
NIP. 19580615985031002
Bidang ilmu/Unit kerja : Fisika/Fakultas Sains dan Matematika

Reviewer 2

Prof. Dr. Kusworo Adi, S.Si., M.T.
NIP. 197203171998021001
Bidang ilmu/Unit kerja : Fisika/Fakultas Sains dan Matematika

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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		3
b. Ruang lingkup dan kedalaman pembahasan (30%)	9		7,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9		8
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	9		9
Total = (100%)	**30**		27,5
Nilai Pengusul = 60% x =			0,6 x 27,5 = 16,5

Catatan Penilaian artikel oleh Reviewer :

1. **Kesesuaian dan kelengkapan unsur isi prosiding:**
   Sesuai dan lengkap
2. **Ruang lingkup dan kedalaman pembahasan:**
   Pembahasan sesuai didukung pustaka
3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
   Baik 5 dari 11 pustaka lebih dari 5 tahun
4. **Kelengkapan unsur dan kualitas terbitan:**
   Baik

Semarang, 4 Agustus 2022
Reviewer 1

Prof. Dr. Drs. Wahyu Setia Budi, M. S.
NIP. 195806151985031002
Unit Kerja : Fisika
Bidang Ilmu: Fakultas Sains dan Matematika

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☐ *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		8,5
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9		9
d. Kelengkapan unsur dan kualitas terbitan /prosiding (30%)	9		8,5
Total = (100%)	**30**		**29**
Nilai Pengusul = 60% x 29 = 17,4			

Catatan Penilaian artikel oleh Reviewer :

1. **<u>Kesesuaian dan kelengkapan unsur isi prosiding:</u>**
   Isi prosiding lengkap seperti yang terlihat pada komponen-komponennya: abstrak, pendahuluan, prosedur eksperimen, hasil dan pembahasan, lalu kesimpulan dan daftar pustaka, semuanya sesuai dan tepat.
2. **<u>Ruang lingkup dan kedalaman pembahasan:</u>**
   Paper ini membahas tentang metode sonokimia untuk mensintesis partikel nano TiO_2 yang didoping N dengan ukuran 21,42 nm. Konsentrasi doping Nitrogen (N) pada TiO_2 dihitung dengan menggunakan perbandingan mol Urea dan TTiP dari 5-9%. Doping N ke TiO_2 mempengaruhi morfologi permukaan partikel. Hasilnya penambahan N meningkatkan kemampuan degradasi TiO_2.
3. **<u>Kecukupan dan kemutakhiran data/informasi dan metodologi:</u>**
   Data-data yang digunakan mencukupi dan didukung metodologi yang baik dengan jumlah referensi kurang dari 5 tahun sejumlah 6.
4. **<u>Kelengkapan unsur dan kualitas terbitan:</u>**
   Karya ini diterbitkan dalam prosiding berkualitas Q3 dengan SJR 0,17 oleh Trans Tech Publications dengan unsur-unsur yang lengkap serta kualitas yang baik.

Semarang, 4 Agustus 2022
Reviewer 2

Prof. Dr. Kuwat Adi, S.Si., M.T.
NIP. 197203171998021001
Unit Kerja : Fisika
Bidang Ilmu: Fakultas Sains dan Matematika

ICMMT 2017

CERTIFICATE
of
PARTICIPATION

Paper Title: *Morphology and Degradation Kinetics of N-Doped TiO2 Nano Particle Synthesized using Sonochemical Method (MM122)*

This is to certify ***Eko Hidayanto*** from ***Departement of Physics, Faculty of Sciences and Mathematics, Diponegoro University, Indonesia*** has attended and delivered a poster presentation on 2017 8th International Conference on Material and Manufacturing Technology (ICMMT 2017) held during May 4-6, 2017, in Singapore.

Conference Committee
ICMMT 2017

May 4-6, 2017 Singapore

Notification of Acceptance

2017 8th International Conference on Material and Manufacturing Technology (ICMMT 2017)

May 4-6, 2017 / Singapore

http://www.icmmt.org/

Dear Heri Sutanto, Eko Hidayanto, Muhammad Irwanto, Mukholit Mu, Singgih Wibowo and Hadiyanto Hadi,

We are pleased to inform you that the review processes for 2017 8th International Conference on Material and Manufacturing Technology (ICMMT 2017) has been completed. The conference received submissions from nearly 22 different countries and regions, which were reviewed by international experts, and about 130 papers have been selected for presentation and publication. Based on the recommendations of the reviewers and the Technical Program Committees, we are pleased to inform you that your paper identified below has been accepted for publication and oral presentation. You are cordially invited to present the paper orally at ICMMT 2017 to be held during **May 4-6, 2017** in **Singapore** at **Nanyang Executive Centre** (Click)

Paper ID: **MM120**

Paper Title: **The Influence of Nitrogen Doping Concentration to The Strain and Bandgap Energy of N Doped-Zinc Oxide Prepared by Spray Coating Technique**

Your paper will be included in ICMMT 2017 conference proceedings which will be published in a volume of Key Engineering Materials. (ISSN: 1662-9795). Indexed by Elsevier: SCOPUS www.scopus.com; Index Copernicus Journals Master List www.indexcopernicus.com; Google Scholar scholar.google.com; Ei Compendex (CPX) www.ei.org; Cambridge Scientific Abstracts (CSA) www.csa.com; Inspec (IET, Institution of Engineering Technology) www.theiet.org; SCImago Journal & Country Rank (SJR) www.scimagojr.com; EBSCO www.ebsco.com, (quoted from KEM official website).

ICMMT 2017 Organizing Committees
http://www.icmmt.org/
Singapore
May 4-6, 2017

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Morphology and degradation kinetics of N-doped TiO_2 Nano particle synthesized using sonochemical method

Hidayanto, Eko ; Sutanto, Heri ; Mukholit ; Wibowo, Singgih ; Irwanto, Muhammad

Save all to author list

[a] Departement of Physics, Faculty of Sciences and Mathematics, Diponegoro University, Jalan Prof. Soedarto, SH Tembalang, Semarang, 50275, Indonesia

Abstract

Nano particle of N-doped TiO_2 with the size of 21.42 nm was successfully created using sonochemical method. Concentration of Nitrogen (N) doping on TiO_2 was calculated using mole ratio of Urea and TTiP. Doping variations were performed by doping 5% to 9% N, and did not change the crystallite size and strain. The nano particle produced has a polycrystalline structure with a dominant diffraction peak (101). Doping N into TiO_2 affects the morphology of particle surface, thus tending to shrink. Results of photo catalysis on liquid samples of MB 20 ppm dye indicate that the addition of N improves the

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Sub-Zero Temperature Effect on Impact Properties of 17-4PH Stainless Steel Processed by Selective Laser Melting

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Keywords: Selective laser melting, 17-4 PH steel, Cryogenics, Charpy impact testing, Micro-hardness, Microstructure

Abstract: The Selective Laser Melting (SLM) process has been proved as the most effective method among Additive Manufacturing (AM) technologies to produce hard, dense and strong metallic structures with intricate shapes and profiles from wide range of metallic alloys. The SLM generated structures from 17-4PH stainless steel high strength alloys involve layer by layer building up through laser melting of successively deposited powder layers. Therefore, the mechanical properties of such structures need to be thoroughly checked and investigated before putting these materials to practical applications. This research mainly investigates the cryogenic impact properties of SLM generated 17-4PH specimen. These characteristics are very important in applications requiring high strength customized structures that could maintain their mechanical properties at sub-zero temperatures. The experimental analysis proves that SLM is a very reliable technology to produce high strength metallic structures and these specimens can function efficiently in extreme conditions.

Introduction

Wrought precipitation hardening (PH) are primarily defined by their strengthening mechanisms. These alloys generally have high yield strength and high apparent hardness while exhibiting superior corrosion resistance compared with martensitic stainless steels [1]. The most common alloy in this group is "17-4 PH", which is also graded as AISI 630 and exhibits a tensile strength exceeding 690 MPa and tensile elongation of 7% [2]. These metals in powder form present an attractive prospect for additive manufacturing (AM) technologies like selective laser melting (SLM) due to their weldability and austenitic/martensitic microstructures.

Selective Laser melting is the class of additive manufacturing (AM) techniques that is currently considered excessively suitable for manufacturing strong metallic structures with intricate profiles from novel metallic alloys for a range of diversified applications [3]. SLM can produce structures with complex freeform geometry which are in high demand by those engineering sectors which favour customization like aerospace, automobile, defence and bio-medical industries [4]. For SLM manufactured parts there is a genuine need of mechanical characterization because the process is characterized by high temperature gradients and densification ratio that in turn may have significant impact on the microstructure and properties of SLM parts [5].

SLM manufactured alloy steel parts possess a significant potential to be used in many impact absorbing applications which may also involve impact behaviours at low temperature or under cryogenic conditions. Materials and mechanical properties of SLM manufactured 17-4 PH steel parts have been investigated by many researchers [6, 7] but there is a need of obtaining reliable low-temperature toughness data for these materials. In this research, Charpy impact test was used to investigate the impact properties of SLM generated 17-4 PH stainless steel specimen at room and sub-zero temperatures ranging from -5 to -55 ^{0}C. Subsequently material properties and microstructures of the Charpy tested samples were also investigated for material integrity.

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Effect of Rolling Temperature on the Properties of Titanium Clad Steel Plate Using DT4 Interlayer

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Keywords: Titanium clad steel plate, DT4, temperature, mechanical properties.

Abstract. In this paper, a TA2/Q235B composite plate was bonded with a DT4 interlayer by hot-rolling in a vacuum. The resulting interfacial structure and mechanical properties were analyzed. The results show that when the reduction is 25%, the rolling speed is 50 mm/s, and the bonding temperature is between 750 and 850°C, the shear strength of the bonding interface increases with temperature. It is difficult to bond TA2 and DT4 at a bonding temperature of 700°C. Brittle compounds, i.e., TiC, FeTi and Fe2Ti, are formed at the interface when the bonding temperature is 950°C, and the bonding strength significantly decreases. When the bonding temperature is 850°C, the shear strength of the interface reaches a maximum of approximately 237.6 MPa, and the fracture surface presents ductile fracture characteristics.

Introduction

Titanium is an ideal material for many process applications due to its superior corrosion resistance. It has been used in petroleum pipes, chemical reactors and heat exchangers. However, when pressure, temperature and/or size demand very thick plates, titanium equipment can become considerably expensive [1]. Titanium clad steel plates are not only resistant to corrosion but also have high strength and reduced costs. Due to these characteristics, titanium clad steel plates are widely used in the petrochemical, shipbuilding, and marine industries, among others [2, 3]. Currently, the main methods of manufacturing titanium clad steel plates are explosive welding, explosive-rolling bonding and rolling bonding. However, with explosive welding and explosive-rolling bonding, the shock wave of the explosion results in partial melting in a region of the composite interface that quickly solidifies, which can easily cause solidification defects such as shrinkage, cracks and pores at the interface [4]. Meanwhile, the environmental pollution caused by the explosion and the lower production efficiency greatly limits the application of explosive composite technology. Compared with the explosive cladding and explosive-rolling bonding methods, the rolling bonding method can produce large-sized and thin titanium clad steel plates with high production efficiency, low pollution and low energy consumption [5].

The formation of brittle compounds such as TiC, FeTi and Fe_2Ti on the interface may cause the degradation of mechanical properties. The coexisting carbide and intermetallic compounds in the interlayer have more detrimental effects on the bonding strength than those individually formed. Compared with Fe, C has a stronger binding capacity with Ti; therefore, TiC is the easiest to form at the titanium steel interface [6].

To prevent the formation of brittle compounds such as TiC, FeTi and Fe_2Ti that reduce the bonding strength, the method of using intermediate layer material is commonly adopted. Some studies have used niobium, silver and nickel as the interlayer [7-9]; however, because of high costs, the application of these materials in the production of titanium clad steel plates has been limited. Therefore, the use of hot-rolling bonding between TA2 and Q235B using a DT4 interlayer was investigated to prevent the formation of TiC. The effect of the bonding temperature on the mechanical properties and microstructure of the bonding interface was also examined.