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

Judul Karya Ilmiah	:	Compared production behavior of borax and unborax premixed SiC reinforcement Al7Si-Mg-TiB alloys composites with semi-solid stir casting method		
Jumlah Penulis	:	3 Orang (M. B. Haryono, **Sulardjaka**, and Sri Nugroho)		
Status Pengusul	:	Penulis ke-2 dan **corresponding author**		
Identitas Prosiding	:	a. Judul Prosiding	:	AIP Conference Proceedings, The 3rd International Conference On Advanced Materials Science And Technology (Icamst 2015)
		b. ISBN/ISSN	:	978-0-7354-1372-6
		c. Thn Terbit, Tempat Pelaks.	:	2016, Semarang, Indonesia
		d. Penerbit/Organiser	:	AIP Publishing
		e. Alamat Repository/Web	:	https://aip.scitation.org/doi/abs/10.1063/1.4945479
		Alamat Artikel	:	https://aip.scitation.org/doi/pdf/10.1063/1.4945479
		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%)	3,00	3,00	3,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	8,00	8,00	8,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	8,00	8,00	8,00
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	7,00	7,50	7,25
Total = (100%)	**26,00**	**26,50**	**26,25**
Nilai Pengusul = (40% x 26,25) = 10,50			

Semarang, 2 November 2020

Reviewer 2

Ir. Eflita Yohana, M.T., Ph.D.
NIP. 196204281990012001
Unit Kerja : Teknik Mesin FT UNDIP

Reviewer 1

Dr. Agus Suprihanto, S.T, M.T.
NIP. 197108181997021001
Unit Kerja : Teknik Mesin FT UNDIP

LEMBAR
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Kategori Publikasi Makalah (beri ✓pada kategori yang tepat) : [√] *Prosiding* Forum Ilmiah Internasional
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Hasil Penilaian *Peer Review* :

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b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00		8,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00		8,00
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	9,00		7,00
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1. **Kesesuaian dan kelengkapan unsur isi paper:**
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2. **Ruang lingkup dan kedalaman pembahasan:**
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3. **Kecukupan dan kemutakhiran data/informasi dan metodologi:**
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4. **Kelengkapan unsur dan kualutas terbitan:**
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Semarang, 2 November 2020
Reviewer 1

Dr. Agus Suprihanto, S.T, M.T.
NIP. 197108181997021001
Unit kerja : Teknik Mesin FT UNDIP

LEMBAR
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[ ] *Prosiding* Forum Ilmiah Nasional

Hasil Penilaian *Peer Review* :

Komponen Yang Dinilai	Nilai Maksimal Prosiding: Internasional [30]	Nilai Maksimal Prosiding: Nasional [ ]	Nilai Akhir Yang Diperoleh
a. Kelengkapan unsur isi prosiding (10%)	3,00		3,00
b. Ruang lingkup dan kedalaman pembahasan (30%)	9,00		8,00
c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)	9,00		8,00
d. Kelengkapan unsur dan kualitas terbitan/prosiding(30%)	9,00		7,50
Total = (100%)	**30,00**		**26,50**
Nilai Pengusul = (40% x 26,50) = 10,60			

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Substansi artikel sesuai bidang ilmu penulis pengusul/kedua (corresponding author) yaitu Teknik Mesin dengan bidang keahlian rekayasa material. Unsur isi artikel yang meliputi: Title, Abstract, Introduction, Materials and Methods, Results and Discussions, Conclusion, Acknowledgements, References telah sesuai dengan petunjuk penulisan yang ada dalam seminar/prosiding. (nilai: 3,00)

b. Ruang lingkup dan kedalaman pembahasan:
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Semarang, 2 November 2020
Reviewer 2

Ir. Eflita Yohana, M.T., Ph.D.
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Document details

AIP Conference Proceedings
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Compared production behavior of borax and unborax premixed SiC reinforcement Al7Si-Mg- TiB alloys composites with semi - solid stir casting method

(Conference Paper) (Open Access)

Haryono, M.B. ✉, Sulardjaka ✉, Nugroho, S.

Department of Mechanical Engineering, Diponegoro University, Tembalang, Semarang, 50275, Indonesia

Abstract

View references (17)

The present study was aimed to investigate the effect of borax additive on physical and mechanical properties of Al7Si-Mg- TiB with the reinforcement of silicon carbide. In this case, the different weight percentage from the reinforcement of SiC (10, 15, and 20% wt), and the borax additive (ratio 1:4) were homogenously added into the matrix by employing the semi - solid stir casting method at the temperature of 590°C. Al7Si-Mg- TiB melted in an electric resistance furnace at 800°C for 25 minutes and the holding time of 5 minutes; SiC was stirred with borax inside the chamber and heated at the temperature of 250°C for 25 minutes. Then, it melted by lowing the temperature into 590°C. The SiC-borax mixture was added into the electric resistance furnace, and automatically stirred by the stirrer at a constant speed (500 rpm for 3 minutes) in the composite A17Si-Mg- TiB . It melted when heated at 750°C for 17minutes,then, casting was performed on the prepared mould. The characterizations of Al7Si-Mg- TiB -SiC/borax were porosity, hardness, and microstructure on the Al7Si-Mg- TiB -SiC/borax. The porosity of AMC tended to increase along with the increaseof the wt% SiC (1.4%-3.6%); however, borax additive underwent a decrease in porosity (0.14%-1.3%). Further, hardness tended to improve along with the increase of wt% SiC. The unboraxmixture had 79,6 HRB up to 94 HRB. Whereas, the borax additive mixture had 105,8 HRB up to 121 HRB. © 2016 Author(s).

SciVal Topic Prominence

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Prominence percentile: 99.230

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July

Sulardjaka, ; Department of Mechanical Engineering, Diponegoro University, Tembalang, Semarang, Indonesia; email:sulardjaka@undip.com

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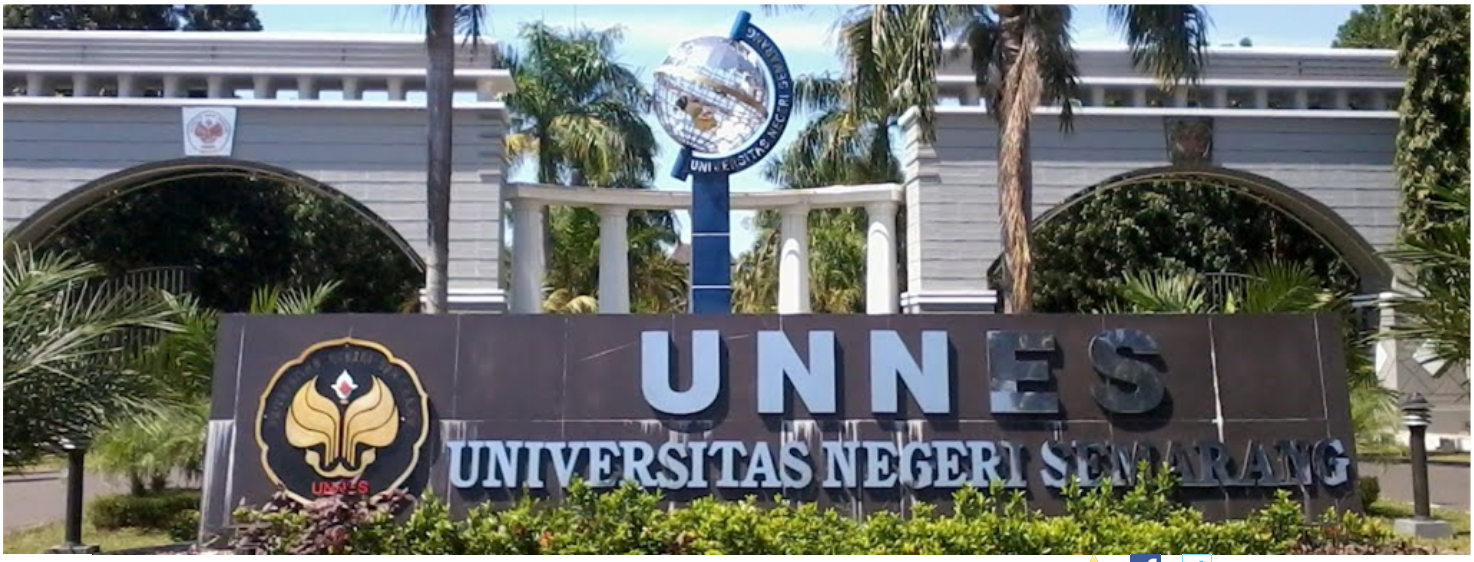

Tuesday, 19 February 2019

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» Important dates
» Venue
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» Programme
» Registration
» Participants
» Proceeding
» Organizer
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» Re: Template of abstract...

- Abstract submission due: June 14, 2015 -

http://situs.opi.lipi.go.id/icamst2015/

CALL FOR PAPERS

The 2015 International Conference on Advanced Materials Science and Technology (ICAMST 2015) will take place in Semarang, Indonesia, September 5-6, 2015. It is a continuation of ICAMST 2013 in Yogyakarta and ICAMST 2014 in Solo, Central Java.

The ICAMST 2015 is jointly organized by Semarang State University, Universitas Gadjah Mada, Institut Teknologi Bandung, Diponegoro University, and Sebelas Maret University, which are the leading universities in Indonesia. Indonesian Physical Society , Materials Research Society of Indonesia (MRS-ID) and Physics and Applied Physics Society of Indonesia (PAPSI) will provide technical supports to the conference.

Prominent researchers and scientists from around the world will join together in the conference to share their latest research results and exchange their ideas. In addition, direct contacts among the researchers and scientists will therefore promote international research networking as well as collaboration in the future.

The conference will include plenary speeches, invited presentations, and contributed presentations (oral and poster). All accepted papers from the ICAMST 2015 will be published in **ADVANCED MATERIALS RESEARCH**, which is indexed in EI Compendex, Thomson ISTP, and Elsevier SCOPUS databases. The full text is online available via platform www.scientific.net.

Scopes that are covered in the conference include: materials science and engineering, materials properties and applications, materials analyses and modeling, and materials manufacturing and processing. Detail of the scopes is listed in **PROCEEDING** menu.

We cordially invite you to attend ICAMST 2015 in Semarang, Indonesia. We do believe your great participation will make our conference success and we would appreciate your participation.

Important Dates:

- Extended abstract submission due: **June 14, 2015**
- Extended abstract acceptance notification: **June 21, 2015**
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- Conference days: **September 5-6, 2015**

TEMPLATE:

- Template full paper of Advanced Materails Research journal (ICAMST 2015) can be downloaded at **AMR template**

Plenary Invited Speakers:

- Prof. Klaus-Dieter Vorlop (The Johann Heinrich von Th nen Institute, Germany)
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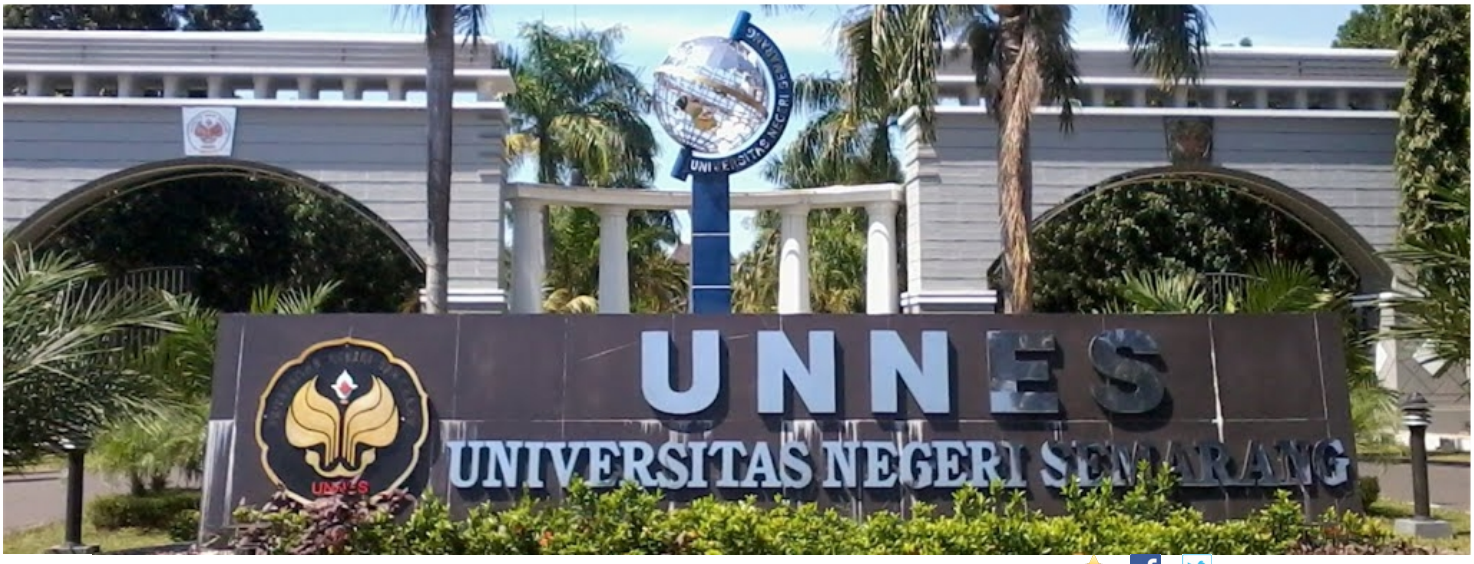
The 2015 International Conference on Advanced Materials Science and Technology (ICAMST 2015)



Tuesday, 19 February 2019

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PREFACE: 3rd International Conference on Advanced Materials Science and Technology (ICAMST 2015)

The 3rd International Conference on Advanced Materials Scence and Technology (ICAMST 2015) was held on the Grasia Hotel during 6-7 October 2015. This event is organized by Semarang State University (Unnes) and co-organized by Bandung Institute of Technology (ITB), Gadjah Mada University (UGM), Diponegoro University (Undip), and Sebelas Maret University (UNS). Semarang, the home of a major state university amid pleasant surroundings, was delightful place for the the third serie of ICAMST.

In this event, the conference was successfully carried out. More than 200 pre-registered authors submitted their works in the ICAMST 2015. The 156 presented papers preserved the high pledge recommended by the written abstracts and the programme was chaired in a professional and efficient approach by the session chairmen who were selected for their international in the subject. The selected papers amount of 106 are reviewed by reviewers from the whole world and edited by the reputable professors in the Universities of Indonesia Republic's Government and doctors inline with their expertises.

The committee has accepted fullpapers from Netherland, Egypt, USA, Korea, Japan, Malaysia, and Indonesia. The focus of this conference is to support Materials Research. Material Research Innovations covers all areas of materials research with a particular interest in synthesis, processing, and properties from the nanoscale to the microscale to the bulk. Coverage includes all classes of material – ceramics, metals, and polymers; semiconductors and other functional materials; organic and inorganic materials – alone or in combination as composites. Innovation in composition and processing to impart special properties to bulk materials and coatings, and for innovative applications in technology, represents a strong focus.

Organizing an international conference involves great energy to finish complex and substantial detail therefore we would like to express my gratitude to all members of ICAMST 2015 organizing committee for their sincere cooperation to hold this event. ICAMST 2015 would not be possible without our keynote speakers, presenters, reviewers, all participants and Semarang State University. We would like to thank for all support.

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Compared Production Behavior of Borax and Unborax Premixed SiC Reinforcement Al7Si-Mg-TiB Alloys Composites with Semi-Solid Stir Casting Method

M. B. Haryono[1,b)], Sulardjaka[1,a)] and Sri Nugroho[1)]

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Abstract. The present study was aimed to investigate the effect of borax additive on physical and mechanical properties of Al7Si-Mg-TiB with the reinforcement of silicon carbide. In this case, the different weight percentage from the reinforcement of SiC (10, 15, and 20% wt), and the borax additive (ratio 1:4) were homogenously added into the matrix by employing the semi-solid stir casting method at the temperature of 590°C. Al7Si-Mg-TiB melted in an electric resistance furnace at 800°C for 25 minutes and the holding time of 5 minutes; SiC was stirred with borax inside the chamber and heated at the temperature of 250°C for 25 minutes. Then, it melted by lowing the temperature into 590°C. The SiC-borax mixture was added into the electric resistance furnace, and automatically stirred by the stirrer at a constant speed (500 rpm for 3 minutes) in the composite A17Si-Mg-TiB. It melted when heated at 750°C for 17minutes,then, casting was performed on the prepared mould. The characterizations of Al7Si-Mg-TiB-SiC/borax were porosity, hardness, and microstructure on the Al7Si-Mg-TiB-SiC/ borax. The porosity of AMC tended to increase along with the increaseof the wt% SiC (1.4%-3.6%); however, borax additive underwent a decrease in porosity (0.14%-1.3%). Further, hardness tended to improve along with the increase of wt% SiC. The unboraxmixture had 79,6 HRB up to 94 HRB. Whereas, the borax additive mixture had 105,8 HRB up to 121 HRB.

INTRODUCTION

AMC is made by mixing particlesreinforcement in a molten alloy. The composites tend to be stronger, more rigid, harder, and durable better than pure aluminum or alloys. In general, aluminum may decrease the electrical and thermal conductivity, and the coefficient of thermal expansion in which the silicon carbide may enhance the thermal conductivity as well as decreasing the electrical conductivity and the thermal expansivity [1-2].

Another study employed an alternative stirring process, and indicated the level of porosity could be between the range of 2-4% in which it was called as an acceptable level of the porosity in the cast composite. In this case, the use of borax additive in the combination of two-step stirring was to improve the wettability without pre-heating the SiC particulates and decrease level of porosity until 1,6% [3-6].

In the semi-solid stir casting process, particles reinforcement were added into a semi-solid alloy and stirring, then,it was poured into the mould for solidification. The mechanical properties of the SiCp/Al composite was strongly related to the particledistribution as well as the interfacial bond strength between particles and matrix. This could be achieved by optimizing stirring parameters [7-12].

The other case, the volume percentage of SiC reinforcement in the Al composite produced, the theoretical and experimental densities tended to be very close as reflected by the maximum of 1.6 % porosity obtained. Moreover, they observed that the porosity in the monolithic cast alloy without stirring have higher level of porosity in comparison with the composites produced with the two-step stirring and used the Borax [3].

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Effect of Alloying Elements Al and Ca on Corrosion Resistance of Plasma Anodized Mg Alloys

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Abstract. Plasma anodizing is a surface treatment used to form a ceramic-type oxide film on Mg alloys by the application of a high anodic voltage to create intense plasma near the metal surface. With proper selection of the process parameters, the technique can produce high quality oxide with superior adhesion, corrosion resistance, micro-hardness, wear resistance and strength. The effect of alloying element Al on plasma anodizing process of Mg alloys was studied by comparing the anodizing curves of pure Mg, AZ31, and AZ61 alloys while the effect of Ca were studied on AZ61 alloys containing 0, 1, and 2 wt% Ca. Anodizing was performed in 0.5 M Na_3PO_4 solution at a constant current density of 200 Am^{-2} at 25°C. Anodic oxide films with lava-like structure having mix composition of amorphous and crystal were formed on all of the alloys. The main crystal form of the oxide was $Mg_3(PO_4)_2$ as analyzed by XRD. Alloying elements Al and Ca played role in modifying the plasma lifetime during anodization. Al tended to extend the strong plasma lifetime and therefore accelerated the film thickening. The effect of Ca on anodizing process was still unclear. The anodic film thickness and chemical composition were altered by the presence of Ca in the alloys. Electrochemical corrosion test in 0.9% NaCl solution showed that the corrosion behavior of the anodized specimens depend on the behavior of the substrate. Increasing Al and Ca content in the alloys tended to increase the corrosion resistance of the specimens. The corrosion resistance of the anodized specimens improved significantly about two orders of magnitude relative to the bare substrate.

INTRODUCTION

During the last decade, there has been great interests in investigating Mg and its alloys as materials for application in cardiovascular and orthopaedic devices [1-7]. This is due to the unique property of Mg that degrades spontaneously in physiological solutions and due to the proximity of the mechanical properties to that of the natural bone [8]. The dissolved Mg ions are tolerable in human body and beneficial for some metabolic reactions [9]. In many cases of implantation, the body needs a temporary implant or device in which case biodegradable materials represent better than an inert one. Historically, Mg and its alloys have been studied as implant material since 1878 [7], however commercial medical devices are still not available. Mg application was limited due to the relatively poor corrosion resistance when exposed to physiology environment which led to liberation of strong hydrogen gas and loss of mechanical integrity.

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Fixation Strength Analysis of Cup to Bone Material using Finite Element Simulation

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Abstract. Fixation of acetabular cup to bone material is an important initial stability for artificial hip joint. In general, the fixation in cement less-type acetabular cup uses press-fit and screw methods. These methods can be applied alone or together. Based on literature survey, the additional screw inside of cup is effective; however, it has little effect in whole fixation. Therefore, an acetabular cup with good fixation, easy manufacture and easy installation is required. This paper is aiming at evaluating and proposing a new cup fixation design. To prove the strength of the present cup fixation design, the finite element simulation of three dimensional cup with new fixation design was performed. The present cup design was examined with twist axial and radial rotation. Results showed that the proposed cup design was better than the general version.

INTRODUCTION

This research is initiated by previous research which focusesthe study in impingement between neck stem surface and liner rim due to human activities [1-3]. Further, the scope of these researchesalso had been developed into the activity of Salat as special daily activity [4-5]. In the real condition, the impingement process will result in push-force for all hip joint components, in particular for cup component. The cup component will be suppressed in axial or radial direction due to impingement process. Therefore, the focus of this research is to continue the research by investigating the cup fixation.

In general, artificial hip joint in total hip arthroplasty (THA) consists of acetabular cup or cup, acetabular liner or liner, femoral head, and stem. In the THA, cup and stem are component that experiencing direct contact with bone. In order to lock the hip component with bone, the good fixation method is required. Especially for the cup, cemented and cement less methods are widely used in the THA. In this paper, the cup fixation in cement-less method will be discussed.

The cup fixation of cement-less method usually uses press-fit and screw methods.Press-fit involves pressure bonding by differences in elasticity between the acetabulum bone and cup. To obtain it, the diameter of the cup is usually bigger than the reaming diameter of the acetabulum [6]. The screw is widely used to support press-fit

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Influence of substrate orientation on the structural properties of GaAs nanowires in MOCVD

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Abstract. In this study, the effect of substrate orientation on the structural properties of GaAs nanowires grown by a metal organic chemical vapor deposition has been investigated. Gold colloids were used as catalyst to initiate the growth of nanowiresby the vapour-liquid-solid (VLS) mechanism. From the field-emission scanning electron microscopy (FE-SEM), the growth of the nanowires were at an elevation angle of 90°, 60°, 65° and 35° with respect to the GaAs substrate for (111)B, (311)B, (110) and (100) orientations respectively. The preferential NW growth direction is always <111>B. High-resolution transmission electron microscope (HRTEM) micrograph showed the NWs that grew on the GaAs(111)B has more structural defects when compared to others. Energy dispersive X-ray analysis (EDX) indicated the presence of Au, Ga and As. The bigger diameter NWs dominates the (111)B substrate surface.

INTRODUCTION

An interesting subject in the VLS growth of NWs is changing their crystalline orientation. Typically, the commonly used GaAs(111)B substrate results in III-V semiconductor NWs grown in to the [111]B direction. This has been reported by several groups in the growth of GaAs NWs [1-5], InP NWs [6] and InAs NW [7]. Important features found in the study of NW when it is grown in the [111] orientation is a high density of twin stacking faults than growing in other orientation. Moreover, NWs also crystallize in a hexagonal structure with higher grown temperature and higher V/III ratio. Thus, from the perspective of quality crystal produced, the NW growth with orientation other than [111] would be beneficial. One method that can be used to change the direction of NW growth is by using different substrate orientation. There are several problems that may arise as result of different substrate orientation such as catalyst particle annealing [8] and chemical treatment of the substrate surface [9], which can affect the substrate surface. On the basis of energy consideration, Wang and co-workers concludes that the (111)B direction is favorable as it minimizes the surface free energy of the liquid-solid interface [10].

EXPERIMENTAL

The experiment starts with semi insulating undoped GaAs substrates immersed in 0.1% poly-L-lysine (PLL) solution for 3 mins. After cleaning with deionize water and subsequent drying with N_2, the 30 nm diameter gold colloids were dispersed on the substrate surface and immediately washed after 20 sec. Due to the positive charge on the surface of the PLL layer, they attract the negative charged of the gold colloids. Nanowires were grown by vertical flow MOCVD at a pressure of 76 Torr. Trimethylgallium (TMGa) and arsine (AsH_3; 10% in H_2) were used as the gasessource and V/III ratio was set at 166. The substrate was annealed in situ at 600°C under AsH_3 ambient for 10 min to desorbed surface contaminants and form eutectic alloy between Ga and gold colloid (Au) [11]. After

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