

International Seminar, Innovation Research For Science, Technology, and Culture (IRSTC) 2013  
 Serpong, November 19-20, 2013

# The Transformation on Nanocrystalline to Amorphous of Fe-Mn-Al Alloys

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## Introduction

Nowadays, amorphous and nanocrystalline alloys magnetic materials have many applications in industrial products.

The wide range applications of the materials arises from the versatile nature of these materials which can provide fast magnetization reversal with minimal magnetic losses.

In this study a transformation of nanocrystalline become amorphous alloy was happen. So, we need to analyze the differences and how it affects the magnetic properties.

Soft and Hard magnetic materials

Hysteresis Loop

### BIDANG INTEREST PROGRAM STUDI

T. Elektro, T. Mek. T. Informatika, T. Ilmu, T. Informatika, Robotika dan Mekatronika (R2)

Bidang interest: Biobesen, Fuelcell, Biodegradabel, Polymer Solar Cell, Magnetic Energy Saver, dll

T. Sipil, Arsitektur, Perencanaan Wilayah & Kota

Bidang interest: System & Management/Construction, Transportation, Hydro, Tropical Housing & Settlement dan, Peri-Urban dan Community Empowerment

Relevansi Industri Pertanian

Bidang interest: Bio-Energy, Local Content and Biodiversity Food Innovation & Pharmaceutical Product

## Phase diagram of the ternary Fe-Mn-Al system [ after Chakrabarti in 1977 ]

These alloys were obtained by melting in an arc furnace, and afterwards by heating them at 1000 °C and quenching in iced water.

**Magnetic properties of the Fe-Mn-Al system depend very strongly on the crystal structure, on the phase composition, and on the degree of order.**

## Outline

- Introduction
- Experimental
- Results and Discussion
- Conclusion

Pohang Accelerator Laboratory (PAL)

## Experimental

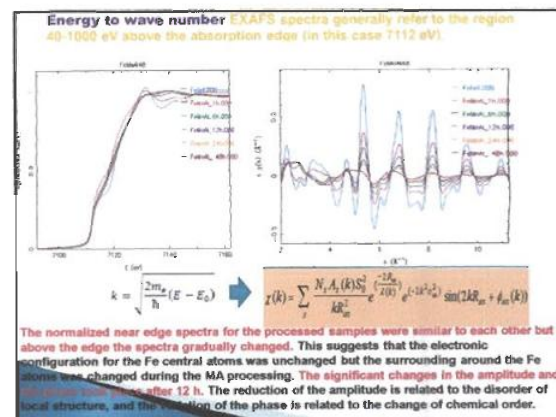
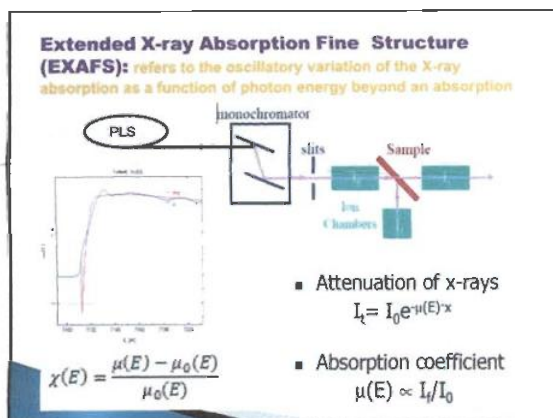
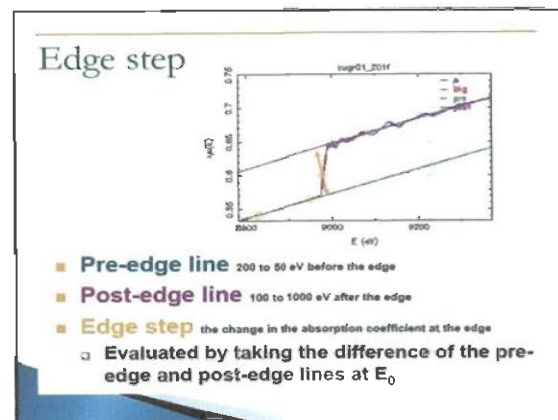
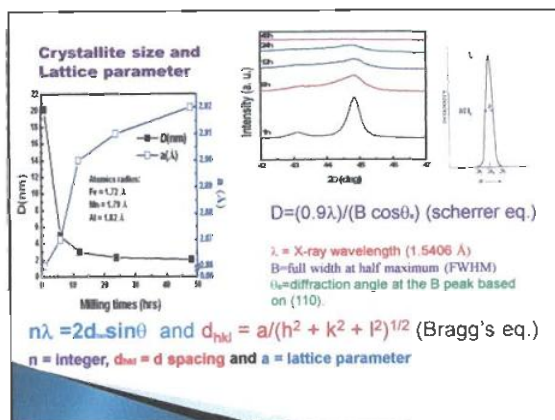
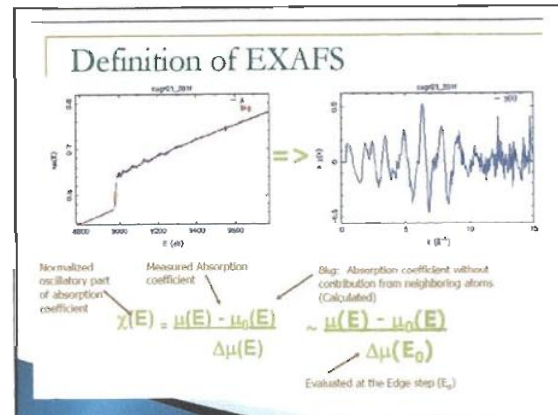
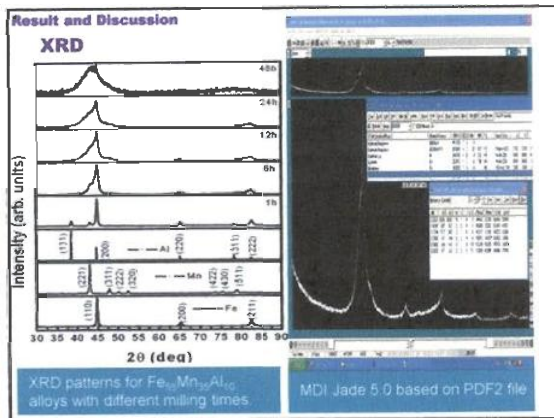
Commercial elements:  
 Fe (53 μm, 99.9%),  
 Mn (75 μm, 99.9%),  
 Al (53-106 μm, 99.9%)

Mixing/Mechanical Alloying:  
 1-48 hrs

Fe<sub>65</sub>Mn<sub>10</sub>Al<sub>25</sub> Nanocrystalline and Amorphous alloys

Characterization:  
 1. X-ray Diffraction with the Cu-K<sub>α</sub> radiation; MDI Jade 5 based on PDF2;  
 2. Extended X-ray absorption fine structure (EXAFS) with an energy of 2.5 GeV and a maximum current of 200 mA; software ATHENA;  
 3. Vibrating Sample Magnetometer (VSM) with magnetic field 2 kOe.

Diagram shows preparation of Fe<sub>65</sub>Mn<sub>10</sub>Al<sub>25</sub> nanocrystalline and amorphous



**Data Analysis**

$$\chi(k) = \sum_s \frac{N_s A_s(k) S_0^2}{k R_{as}^2} e^{\frac{-2R_{as}}{\lambda(k)}} e^{(-2k^2 \sigma_{as}^2)} \sin(2kR_{as} + \phi_{as}(k))$$

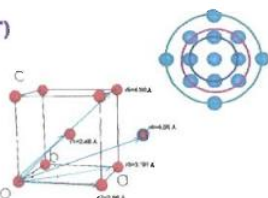
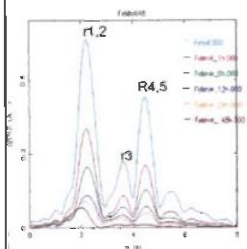
$$k = \sqrt{\frac{2m_e(E - E_0)}{\hbar^2}}$$

with  $N_s$ : number of scatterers at the distance  $R_{as}$ ,  $S_0^2$ : inelastic loss term,  $A_s(k)$ : backscattering amplitude,  $\lambda(k)$ : photoelectron mean free path,  $\sigma_{as}^2$ : mean square deviation in  $R_{as}$  (Debye-Waller factor),  $\phi$ : phaseshift of the photoelectron from passing through the potentials of absorbing and scattering atoms.

**Conclusion**

- EXAFS spectra showed both variations in the amplitude and the phase for the samples with milling time of 12 hrs and afterwards.
- In the amorphous state (48-hrs milling), EXAFS showed the atoms of long-range order were vanished
- The formations of  $Fe_{25}Mn_{10}Al_{35}$  nano-crystalline and amorphous alloys were explicitly shown in the XRD patterns with shifted and broadened peaks.
- The significant change in the structural phase confirmed that Al and Mn atoms were introduced to the Fe host lattice during the mechanical alloying process.
- The  $Fe_{25}Mn_{10}Al_{35}$  alloy is a good agreement with phase diagram of the ternary Fe-Mn-Al system by Chakrabarti as a ferromagnetic with the bcc structure.
- $M_s$  was decreased due to the magnetic dilution caused by the incorporation of Al and Mn. Meanwhile,  $H_c$  increased due to the development of single domains and the reduced particle size, then its increase was due to over milled.

**Fourier Transform (FT)**



$$\rho_n(r) = \frac{1}{(2\pi)^{1/2}} \int_{k_{min}}^{k_{max}} w(k) k^n \chi(k) e^{i2kr} dk$$

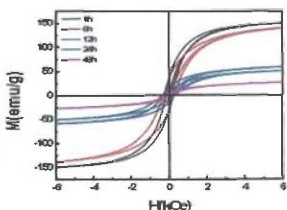
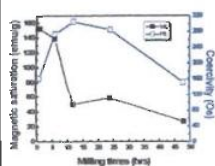
$$w(k) = \frac{1}{2} \left[ 1 - \cos 2\pi \left( \frac{k - k_{min}}{k_{max} - k_{min}} \right) \right]$$

Start from 12 hrs milling time alloying was dominant and new phases were formed. The amount of the new phases increased as the processing time increased. At 48 hrs milling the material became amorphous clearly.



▶ Thank you for your attention!

**VSM**



$H_s$  is increased for the short time of milling could be attributed to particle size reduction, which converts them from a multi-domain state to a mono domain state. Nevertheless, when it is over milled, it tends to become highly disordered and its crystallite size is significantly reduced, losing part of its high magnetic anisotropy thus reducing  $H_c$ . (J. Sort et al., *Phys. Rev. B*, vol. 65, p. 174420, 2002.)

## Transformation on Nanocrystalline to Amorphous State of Fe-Mn-Al Alloys

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**Abstract**—In the last decade, applications of soft magnetic amorphous and nanocrystalline alloys are interesting for experts. Many properties of these materials are superior to those of the conventional alloys with the same chemical composition. The formations of  $\text{Fe}_{55}\text{Mn}_{10}\text{Al}_{35}$  nanocrystalline and amorphous alloys which were made by using mechanical alloying (MA) technique with various times of 1 to 48 hrs were explicitly shown in the XRD patterns with shifted and broadened peaks and the EXAFS spectra showed variations in the amplitude and the phase for the samples with milling time of 12 hrs and afterwards. In the amorphous state the atoms of long-range order in EXAFS were disappeared. The significant change in the structural phase confirmed that Al and Mn atoms were introduced to the Fe host lattice during the mechanical milling process. The  $\text{Fe}_{55}\text{Mn}_{10}\text{Al}_{35}$  Nanocrystalline alloy is a good agreement with phase diagram of the ternary Fe-Mn-Al system by Chakrabarti as a ferromagnetic with the bcc structure. Magnetic saturation ( $M_s$ ) was decreased due to the magnetic dilution caused by the incorporation of Al and Mn. Meanwhile, magnetic coercivity ( $H_c$ ) was increased in short milling times and then it decreased due to the development of single domains and the reduced crystallite size. For 48-hrs milling the sample was became amorphous state, then  $M_s$  and  $H_c$  were more decreased.

**Keywords**— $\text{Fe}_{55}\text{Mn}_{10}\text{Al}_{35}$  nanocrystalline and amorphous alloys, x-ray diffraction (XRD), and extended x-ray absorption fine structure spectroscopy (EXAFS).

**International Seminar ;  
Innovation Research For Science, Technology, And  
Culture**

**IRSTIC 2013  
PROGRAM BOOK**

Graha Widya Bhakti  
Kawasan Puspiptek Serpong  
19 - 20 November 2013



Organized by:  
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NATIONAL INSTITUTE OF SCIENCE AND TECHNOLOGY  
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## Table of Content

Preface	i
Committee	vi
Honorary and Invited Speakers	viii
Schedule of Presenter	ix
Session I	
Science	
Technology	
Culture	
Session II	
Science	
Technology	
Culture	
Poster	xv
Abstract	1-69

## PREFACE

International Seminar on Innovation Research for Science, Technology and Culture (IRSTC) 2013 organized by School of Post Graduate , National Institute of Science and Technology (ISTN with collaboration several university, research institutes, and professional organizations. The seminar will be held in Gedung Widya Graha Widya Bhakti, Dewan Riset Nasional, Kompleks Pusat Penelitian Ilmu Pengetahuan dan Teknologi (Puspiptek), Serpong, Banten on 19 – 20 November 2013. This seminar is also realization as a part of the concurring of 63<sup>th</sup> ISTN and 14<sup>th</sup> School of Postgraduate ISTN anniversary event and commitment to provide the second ISTN international seminar in contributing to the enhancement of the international cooperation among Indonesia institutes and the other countries.

International Seminar on Innovation Research for Science, Technology and Culture (IRSTC) 2013 provide an international forum for the sharing of the knowledge, information, experience and result research as well as the review of progress and discussion on the state of the art and Innovation Research For Future Nation and Sustainable Development In Science, Technology And Culture for sustainable development.

The Honorary speakers is Dr Yusuf Kalla, former vice president of Republic Indonesia and the invited speakers and participant come from Malaysia , Germany, South Korea, England, Singapore and Indonesia. The papers will published in the proceeding and selected paper will be published on Journal of Makara, University of Indonesia and other related international journals.

We would also like to express our heartiest to thank to the honorary speakers, Dr Jusuf Kalla, invited speakers and participants of IRSTC 2013, .I would like also to thanks all member of advisory board, steering committee, member of organizing committee, peer reviewers, sponsors and National Institute Science and Technology staff for their support to success of this seminar. We do hope that all participants will have enjoyable meeting at this seminar

**Prof. Dr. Masbah RT Siregar, APU**  
Chairman of Organizing Committee IRSTC 2013

## PREFACE

Concurring with 63rd anniversary of ISTN, ISTN's Post Graduate School is holding the second International Seminar, with the topic of "Innovative Research in Science, Technology and Culture" abbreviated as "IRSTC". The themes discussed are quite extensive, tailored to the field of Science and Technology that ISTN's keen with. This seminar also included seminar in the field of culture, since this year ISTN's Architecture department began a review of research of Indonesian architectural heritage in cooperation with the *Polytechnic Port Dickson Malaysia*. Architectural heritage including cultural legacy of our archipelago of *Nusantara* is reckon as highly sophisticated and require scientific study to be scientifically documented.

The purpose of this seminar is not only to foster a conducive academic atmosphere in ISTN as an institution of higher education that had been serving the country for 63 years, but also for the exchange of ideas among researchers and scientists in the fields of Science, Technology and Culture. Paper that meets the requirements will be published in an accredited journal. This seminar is also a convenient means for students to present the results of doctoral research, as one of the requirements for a doctoral degree. This seminar is also suitable for professors and researchers to develop a depth of knowledge, the opportunity to discuss, build networks and ultimately improve their career path.

Speakers in this seminar is divided into three levels, namely are: an honorary speaker, invited speakers, and call papers' speakers. Honorary speaker at the seminar is Dr. Mohammad Jusuf Kalla, Vice President of the Republic of Indonesia in 2004-2009. Prior to serving as Vice President, Mr. JK (what he is used to call), known as a successful entrepreneur in a variety of technology products with some of his companies' products not only used in Indonesia but also in foreign countries.

Invited Speakers are experts in the field of the seminar and will come from six countries, namely: Germany, the UK, South Korea, Singapore, Malaysia and Indonesia. Compared with the first international seminar which was held three years ago, from the state of origin, there is an increase of one hundred percent.

Fifty papers in the fields of science, technology, and culture will be presented at the seminar, which authors come from a variety of universities, research institutions and from various countries. Compared to the first seminar, the amount of papers presented an increase of 67 percent. This suggests this seminar is more well-known and more useful, inshallah.

We believe, this seminar will increase the exchange of information and research results that are innovative, useful not only for improving the scientific knowledge of the participants and the scientific community, but also for using the results to be further developed into products of technology. We expect the third International Seminar Insha Allah will be held every two years, involves participation from the scientific community more widely, increases the quality of the materials, and raises the more conducive academic atmosphere to the creation of innovative new works in the fields of science, technology and culture.

**Prof. Dr. Dahmir Dahlan, MSc**  
**Chairman of Steering Committee IRSTC 2013**



## PREFACE

Welcome speech

**Rector of the National Institute of Science and Technology Jakarta**

In International Seminar on the theme "Innovation Research for Science, Technology and Culture"  
Graha Widya Bhakti, Puspiptek Serpong, Banten.

Ladies and gentlemen,  
Thank God thanksgiving let Allah SWT, for His will in this morning we are all still healthy given grace, so as to attend the International Seminar which is a series of events Anniversary National Institute of Science and Technology are to 63 years, which God willing will benefit welfare academic community, society, and Indonesia in general.  
Ladies and gentlemen, first of all let me express our appreciation and thanks are the highest to the Honorable Mr. Dr. Muhammad Yusuf Kalla on his presence in our International seminar, as well as to colleagues who come from different countries to jointly collaborate in research and development of science and technology.  
International seminar on "Innovation Research for Science, Technology and Culture (IRSTC)" is the second international seminar we held a very meaningful and given that the role of science, technology and culture in providing direction and growth of civilization and the state has been tested.  
Before discussing further related this seminar, let us look for a moment at the nation's natural resources is so abundant and diverse. Marine resources, forests, fertile soil, various minerals and gases, as well as biodiversity. Also supported population, cultural diversity, and strategic access to global mobility network.  
God-given potential to our nation, indeed able to realize the vision of the nation. In the Master Plan for the Acceleration and Expansion of Indonesian Economic Development in line with the National Long Term Development Plan 2005-2025 that the national development vision is to realize the Self- Indonesia Society, Advanced, Fairness, and Prosperous.  
To realize the Vision 2025 target of 4.0-4.5 trillion GDP, income per capita 14250-15500 USD, conducted three missions that became the main focus, namely: (1) an increase in value-added and the expansion of the value chain of production and distribution process. (2) Promote the establishment of an increase in the efficiency of production and marketing as well as the integration of the domestic market, (3) Encourage the strengthening of the national innovation system in the production, processing, and marketing to strengthen global competitiveness towards sustainable innovation-driven economy.  
Ladies and Gentlemen,  
The mission of national development, basically directly related to the role of science, technology and culture, given that AFTA and APEC will be realized. Mastery of science, technology and cultural identity of our nation identity greatly affect the competitiveness of the nation.  
This suggests that in order to build a nation with a mission there, there is no choice but to build and strengthen its human resources through mastery of science, technology and culture of excellence.

Challenges we face in strengthening human resources through science, technology and culture is closely related to the role of higher education is not optimal in educating the nation's children to have superior capabilities particularly in the mastery of science and technology. Implementation *Tri Dharma Perguruan Tinggi* is actually not proportional between education and teaching, research and community service. During these colleges devote more of its activities on education and teaching process. While research and dedication to the community has not received adequate portion, so that the drainage process outcome world of higher education to the community and industry are still many in the form of the graduates are absorbed by their bias. Products and research skills also become an integral part in the *Tri Dharma Perguruan Tinggi*, yet many are biased enjoyed by the higher education stakeholders.

In addition to these challenges, other issues also need attention urgently and we all are: (1) Lack of access to productive resources such as capital, raw materials, and information, (2) Low quality of human resources, (3) Low productivity (high cost transaction/business, (4) Access to and application of low technology.

Ladies and Gentlemen,

Access and application of science and technology that is low causing the nation's competitiveness and our country is low. Therefore, to advance is to involve all the actors of innovation that exists within a robust system that we are familiar with the Innovation System. Through the Innovation System universities as producers of technology can establish a good networking and synergy with all stakeholders to develop the nation and our beloved country.

In connection with the strengthening of Innovation Systems, a major step that has been generated related to it is the Joint Regulation of the Minister of Research and Technology and the Minister of Internal Affairs on Strengthening Regional Innovation System (SIDa) which was signed on April 25, 2012. Strengthening Regional Innovation System here contains two very fundamental things: First, to improve and maintain the competitiveness of the region to strengthen its position in national and international trade arena. Secondly, being able to expand opportunities for the community to engage in a process that creates a great value.

I want to emphasize again that in an Innovation System, the role of academia as a producer of a technology that will be used by the public and the industry is very significant. Higher Education as the academic component of the innovation actors is unique and at the same time advantages compared with the existing R & D institutions, namely the number of science and technology human resources compared to most industrial and government sectors. So the university not only as a producer of quality graduate employment as needed or as producers of knowledge to fill in the repertoire of knowledge, but also required to make a real contribution to the performance of the national economy to improve the nation's competitiveness.

Ladies and Gentlemen,

Utilization of science and technology in a cycle of industrial products cannot be negotiable. Cycle that starts from the idea, development, production, distribution, and market require advanced touch technology. This seminar is one contribution of the National Institute of Science and Technology in the nation and the state come to realize that having endurance, competitiveness and advanced to face global competition.

The role of science and technology R & D carried out by institutions and universities, has been linked also to the culture of the nation, especially in helping to establish the behavior of a developed nation and country of residence. Socialization of the

nation's vision and mission should continue to be implemented especially among the youth as the next generation. Attention to youth is urgent given the current nation of Indonesia is in a period of "demographic bonus" (2010-2035) with a population of 237 million, where the age is greater than non-productive age. Golden age demographics of a nation is only conducted once in 100 years. This period can be optimized if it will have a huge impact and be a window of opportunity to become a great and powerful nation. However, it can also be a threat if we can take advantage of these opportunities.

In the explosive demographic bonus period the number of youth, where more than 50 % of reproductive age (120 million) is young (62.775 million). Therefore, youth empowerment through the growth and strengthening of higher education and industry-based absolute mastery of science and technology is done.

In such a context it Indonesia always strive to provide a constructive contribution in developing science, technology and culture through a variety of activities including international seminars. This seminar is an international collaboration carried on in collaboration with various universities in the country, foreign universities, research institutes and industries which are to exchange knowledge, advanced technology and cultural studies that can be used as a container in the developing and the search for solutions to national problems especially in science and technology. Finally, I hope this International Seminar can provide recommendations on the construction industry, the nation and the state-based science and technology.

Congratulations following the seminar, hopefully many benefits that we can get. We would like to thank all those who provided support and encouragement for the implementation of outstanding seminar

**Prof. Ir. Agus Priyono, PhD**

**Rector of National Institute of Science and Technology (ISTN)**

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Franka Hendra Sukma, ST

## HONORARY AND INVITED SPEAKER

### Honorary Speaker:

Dr. Muhammad Jusuf Kalla  
Former Vice President Republic of Indonesia

### Invited Speakers:

1. Prof. Dato Ir. Dr. Zainai, *Universiti Teknologi Malaysia, Malaysia*
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11. Mejar (K) Hj. Mohd Kharirbin Mohd Ibrahim, *Polytechnic Port Dickson, Malaysia*
12. Prof. David Dan Fullict, *Ph.D. Impactivity UK Ltd. England*

**LIST OF PRESENTATION**  
**NOVEMBER 19, 2013 (TUESDAY)**  
**SESSION I**

**ROOM A.**

	Author	Title
	Moderator : Dr. Tiah Rachmatiah, Msi. Apt.	
1	Anayanti Arianto <sup>1</sup> , Hakim Bangun <sup>1</sup> , Ella Fransiska <sup>1</sup> and Amila Fitri <sup>2</sup>	Protective Effect Of Alginat Liquid Against Hydrochloric Acid-Induced Gastric Ulcer In Rats
2	Sumar Suhendhi <sup>1</sup> , and Dr.Oo Abdul Rosyid, MSc <sup>2</sup>	Grid Stability Improvement On Reduction In Force From Waves Harmonic At Center Expenses 7.5 MW
3	Anwar Budianto <sup>1</sup> , Fery Hadi Setiawan <sup>2</sup> , Toto Trikasjono <sup>3</sup>	Design of Monitoring System for Ambient Temperature and Humidity
4	Anwar Ilmar Ramadhan <sup>1</sup> , As Natio Lasman <sup>2</sup> , Anggoro Septilarso <sup>2</sup>	Theoretical Study Of Forced Convection Heat Transfer Nanofluid Al <sub>2</sub> O <sub>3</sub> – Water in Subchannel Rectangular
5	ELDA RAYHANA <sup>1</sup> , NOVIZAL <sup>2</sup> , AZWAR MANAF <sup>3</sup>	Influence Of Heating Rate On The Formation Of TiO <sub>2</sub> Phase From Iron Ore Containing Ilmenite By Carbon Reduction Process
6	Erica Caesariaty H.P.N. <sup>1*</sup> dan I Dewa Putu Hermida <sup>2</sup>	Influence Of Current And Time Variation To Conductive Polymers Pani-Ppy Deposition At Uric Acid Biosensors Application
7	Faza Ardelia.F <sup>1</sup> , Maimuna <sup>1</sup> , Agus Sofwan <sup>3</sup> , M.Nuh Indro <sup>1</sup>	Utilization Heat Gradient of Liquid Palm Oil Mill Effluent As Potential Source of Electricity

ROOM B

	Author	Title
	<b>Moderator : Dr. Ir. Endang Widjajanti, MT.</b>	
1	Mellova Amir <sup>1</sup> , H.Syarif <sup>2</sup> , M.Winugroho <sup>3</sup> , J.A. Driskell <sup>4</sup> , A. Sulaeman <sup>2</sup>	<i>Effect of cooking methods on the vitamin content of value cuts from Indonesian swamp buffalo, local cattle, and imported wagyu beef</i>
2	Musfirah Cahya Fajrah <sup>1,a</sup> , Bambang Soegijono <sup>2,b</sup>	<i>Boron Carbide B<sub>2c</sub> And B<sub>8c18</sub> Synthesized Using Boric Acid-Glucose And Boric Acid-Active Carbon At Low Temperature Without Coreductor Materials</i>
3	Novizal <sup>1,a</sup> , Azwar Manaf <sup>2,b</sup> , Elda Rayhana <sup>3,c</sup>	<i>Influence of Temperature on Structural and Magnetic Properties of (Ba<sub>(1-x)</sub>Sr<sub>(x)</sub>Fe<sub>12</sub>O<sub>19</sub>)-(Ba<sub>(1-x)</sub>Sr<sub>(1-x)</sub>TiO<sub>3</sub>) (where x = 0.3, 0.5, 0.7) Composite prepared by Milling.</i>
4	Edy Supriyadi	<i>Impact of Biodiesel Development Toward Derivative Product Crude Palm Oil National Industry</i>
5	Reni Susanti	<i>Effect of physical exercise during hemodialysis on levels of urea and creatinine in patients with End Stage Renal Disease at RSUD Dr Achmad Mochtar Bukittinggi</i>
6	Setyo Purwanto <sup>1</sup> and Isao Sakamoto <sup>2</sup>	<i>Argon Ion Irradiation Effect on Magnetic Properties of Fe-Al<sub>2</sub>O<sub>3</sub> Nano Granular Film</i>
7	Sri Helianty <sup>1</sup> , Zulfansyah <sup>2</sup> , Rio Nanda Novendra <sup>3</sup>	<i>Modelling and Simulation of Performance of Downdraft Gasifier Using Gibbs Free Energy Minimization Method</i>



ROOM C.

	Author	Title
	<b>Moderator : Dr. Ir. Setia Damayanti, MT.</b>	
1	Tajuddin Nur <sup>1</sup> , M.D Trisno <sup>2</sup> , A.Husen <sup>2</sup> , Dahmir Dahlan and Agus Priyono	A Novel Structure of Permanent Magnet Linear Synchronous Machine for Maglev Transport
2	Uke Kurniawan Usman <sup>1</sup> , Galuh Prihatmoko	Frequency Selection Analysis of Long Term Evolution (LTE) Technology in Indonesia
3	Perdamean Sebayang <sup>1*</sup> , Masbah Rotuanta Tagore Siregar <sup>2</sup> , Riski Titian Ginting <sup>3</sup> , Ayu Yuswita Sari <sup>1</sup> , Lukman Faris Nurdiansyah <sup>1</sup>	Investigation of Cu, Mn or Ti ion Substitution on the Microwave Absorbance Properties of Barium M-Hexaferrite
4	A.Sofwan, Jamaluddin and A.Priyono.	Analyse The Power Quantity of solar cell dYnamic SYSTEM
5	Drs.Agus Ponco P.,MT <sup>1</sup> , Lin Prasetyani ST <sup>2</sup> , Bayu Erlangga <sup>3</sup>	Making Control System For Rubber Bushing Press Machine Of Nissan X11m Product In Pt Kyb Indonesia
6	Aprilia Sakti Kusumalestari	Measurement Of Aircraft Noise In Airport Case Study : Soekarno – Hatta International Airport
7	H. Budiastuti <sup>1*</sup> , D. Widyabudiningasih <sup>2</sup> , M. Ghozali <sup>1</sup> , D.R.D. Kurnia <sup>3</sup>	Application of Single Stage Fixed Bed Anaerobic Reactors in Degradation of Leachate from MSW Final Disposal

**LIST OF PRESENTATION**  
**NOVEMBER 20, 2013 (WEDNESDAY)**  
**SESSION II**

**ROOM A**

	Author	Title
	<b>Moderator : Dr. Ir. G. Suprayitno, MM</b>	
8	Lamhot Hutagalung, Masbah RT Siregar and M. Firdausi	Quantum Mechanism of Absorption Process In Si And GaAs Photodetector
9	Agus Priyono <sup>1</sup> , Agus Sofwan <sup>1</sup> , Setia Damayanti <sup>2</sup> , Sofia Pinaridi <sup>1</sup>	Optimization Of Fuzzy Logic Using Genetic Algorithm And Clonal System In Traffic Control System
10	Annas Muzakki Syarif <sup>1</sup> , Syamsul El Yumin, M.Eng <sup>2</sup>	Optimization Received Signal Level and Bit Error Rate Based on VSAT Technology for Rain Attenuation
11	Dahmir Dahlan <sup>a*</sup> , Muhamad Dwi Trisno <sup>b</sup> , and Muhammad Firdausi <sup>c</sup>	Design of Modern Sailing Ship with Hybrid Rotor
12	Erllyta Septa Rosa, Lia Muliiani, Shobih and Jojo Hidayat	Series-Interconnected of Plastic Dye-Sensitized Solar Cells Prepared by Low-Temperature Binder-free Titania Paste
13	Anayanti Arianto <sup>1</sup> , Hakim Bangun <sup>1</sup> , Urip Harahap <sup>1</sup> , and Syafruddin Ilyas <sup>2</sup> ,	Ranitidine Hcl Release From Alginate, Chitosan, Alginate-Chitosan And Calcium Alginate-Chitosan Beads

ROOM B

	Author	Title
	<b>Moderator : Kartiko Eko Putranto, Dipl-Ing, DEA, PhD</b>	
8	<sup>1</sup> Gregorius Hendita Artha K., S.Si., M.Cs <sup>2</sup> Ida Bagus Indra Prayoga,	Checkpoint Application On Circuit Rolly With Nfc (Near Field Communication) Method Base On Android Mobile
9	Herri Trisna Frianto <sup>1)</sup> Agus Priyono <sup>2)</sup> Hairi Zamzuri <sup>3)</sup>	Smart Control System Identificatiion Asphalt Crash on The Bridge and Monitoring Traffic Light on The Thawaf Methode in MLP and GA Neural Network Online Using Multimedia System.
10	MD. Trisno <sup>1</sup> , Dahmir Dahlan <sup>2</sup> , Suhadi Wiromodjo <sup>3</sup> Agus Priyono	A Preliminary Study to Bujld Maglev System in Indonesia
11	S. El Yumin <sup>1)</sup> and Andriany <sup>2)</sup>	Repainting Method for MSC Performances Optimization in GSM Network
12	S.Afandi , M.I.Suryadi, I.F.Abdillah, D. Oktavian P. and A.Sofwan	Determining 27tn Third Harmonic Neutral Undervoltage Protection Scheme To Create 100 % Generator Stator Ground Protection
13	Tomi Budi Waluyo, Dwi Bayuwati	Implementation A Pll-Based Phase Demodulator For An Optical Fiber Heterodyne Interferometer
14	Kontan Tarigan	Transformation on Nanocrystalline to Amorphous State of Fe-Mn-Al Alloys

ROOM C

	Author	Title
	<b>Moderator : Dr. Ir. Edy Supriyadi, MBA</b>	
8	Khoirul Umam <sup>1</sup> , and Syamsul El Yumin <sup>2</sup>	Analysis of VoIP Performances On Wireless LAN Network Based On SSL VPN Protocol and GSM Codec
9	Dika Supyandi, Yayat Sukayat, A.C. Tridakusumah	Inclusive Agribusiness Models To Utilize Global Market Opportunities (A Case Study of Sustainable Organic Rice Development in Bandung and Tasikmalaya Regencies of West Java)
10	Nur Kholis	The Strategies For Improving Teaching-Learning Processes Of Engineering Mathematics At Electrical Technology Department Faculty Of Technology State University Of Yogyakarta
11	Nurhayati, Zaitun, Evi Satispi, Herwina Bahar	Edmodo-Based Social Learning Network In Technopreneur Subject
12	S.S.Moersidik <sup>1*</sup> , S.Damayanti <sup>2</sup> , Y.R.Intarti And L. Mustika	Humanist Management Model A Simple House Rental Flats (Rusunawa) In DKI Jakarta
13	Irawan Muripto	Sahul Continental Shelf Dynamic for Fishing Ground

LIST OF POSTER

SCIENCE

No	Author	Title
1	Achmad Maulana Soehada <sup>1,*</sup> , Nasruddin M.N. <sup>1</sup> , Kerista S. <sup>1</sup> , Candra K. <sup>2</sup> , P. Sebayang <sup>2</sup>	Complex Permittivity and Permeability of BaFe <sub>(12-2x)</sub> Mn <sub>x</sub> Ti <sub>x</sub> O <sub>19</sub> as Microwave Absorber Materials
2	Moh. Hardiyanto <sup>1,2</sup>	New Approaching of Th <sub>x</sub> Nano-material on Abrikosov-Balseiro-Russell (ABR) Model at 415 tesla Super Magnetic
3	Nasruddin M.N. <sup>1</sup> , Achmad M. S. <sup>1a</sup> , Candra K. <sup>2</sup> , Lukman F. N. <sup>2</sup> , P. Sebayang <sup>2</sup>	The Effect Of Sintering Temperature And Mn-Ti Substituted BaFe <sub>12O<sub>19</sub></sub> On The Microwave Absorbing Properties
4	Rifan Satiadi <sup>1*</sup> , Erylta Septa Rosa <sup>2</sup> , Shobih <sup>2</sup> dan Andhy Setiawan <sup>1</sup>	Effect Of Composition Of Mixed Layer P3ht-Zno On The Electric Characteristics And Performance Hybrid POLYMER SOLAR CELL ON Flexible Substrates
5	Moh. Azhar, Azwar Manaf & Bambang Soegijono	Rice Husk Ash and Pumice in Lightweight Concrete of Engineering Materials to Improve Mechanical Strength Portland Cement Composites
6	Novrita Idayanti, Nanang Sudradjat, Tony Kristiantoro	Nanoparticles on Magnetic Materials that Preparing by Sol Gel Method

## TECHNOLOGY

No	Author	Title
7	Amiral Aziz	Super Critical Steam Power Plant And Its Application In Indonesia
8	Moh. Fadhli Abdillah <sup>1</sup> and Djoko Hari Nugroho <sup>2</sup>	Robot Telecontrol System Based On Internet Network For Gas Detection
9	Fahmi Soma <sup>1</sup> , and Dr.Oo Abdul Rosyid, MSc <sup>2</sup>	Optimization of power generation in telecommunication system with charge discharge method
10	Lukas Adrian	Panel System Design And Installation Of Electrical Smart Relay Microcontroller Easy 719-Ac-Rcx Hotel Room
11	Usep Gunawan <sup>1</sup> and Nursidik Yulianto <sup>2</sup>	System Information and Communication of Commuter Line Jabodetabek Area Based Google Maps API (Application Programming Interface) Use Android Smartphone
12	A. Sofwan, Sugeng and A.Priyono	Pollution Gas Detection System by Using SnO <sub>2</sub> Gas Sensor
13	S. El Yumin <sup>1</sup> , and Iwan Hernawan <sup>2</sup>	The Affect of MIMO System and Mapping Method for Channel Capacity of Mobile WiMax

CULTURE

No	Author	Title
14	Lukman Sukarma <sup>1</sup> , Franka Hendra S <sup>2</sup>	The Contribution of Human Resources for Continuous Improvement toward Achieving Excellence in Manufacturing
15	Setia Damayanti <sup>1</sup> , Agus Priyono <sup>2</sup> , Madinah <sup>3</sup> , Daisy Radnawati <sup>4</sup> , Dian Wahyudi <sup>5</sup>	Model Environmental Conservation -Based On Society Towards Sustainable Development In The Watershed
16	S.Damayanti <sup>1</sup> , S.S.Moersidik <sup>2</sup> , Y.R.Intarti <sup>3</sup> And L. Mustika <sup>4</sup>	Compact Management Model A Simple House Rental Flats (Rusunawa) In Dki Jakarta
17	Setia Damayati <sup>1</sup> , Bagus Yulianto <sup>2</sup> , Dian Wahyudi <sup>3</sup>	Conservation of Karst and Cave Based on Community towards Sustainable Development
18	<sup>1</sup> Maulina Dian.P., <sup>2</sup> Muflihul Iman, <sup>3</sup> Ima Rachima	Local Wisdom Of Traditional Architecture (Case Study: Village Panglipuran And Tenganan, Bali)
19	<sup>1</sup> Maulina Dian.P., <sup>2</sup> Lely Mustika	Historical Heritage As Jakarta City Tourism Development Potential

Seminar Agenda  
Innovation Research for Science, Technology and Culture 2013  
Graha Widya Bhakti, Puspiptek Serpong, Banten  
19 – 20 November 2013

November 19, 2013 (Tuesday)

Time	Program
08.00 – 09.00	Registration Coffee Morning
09.00 – 09.45	Opening Ceremony
09.00 – 09.20	Welcome Dance Anthem of Indonesia Raya ISTN Hymne
09.20 – 09.25	Report of Organizing Committee
09.25 – 09.30	Welcome Speech from Director of School of Postgraduate
09.30 – 09.40	Opening Remarks from Rector of ISTN
09.40 – 09.45	Pray
09.45 – 10.30	<b>Honorary Speaker;</b> Dr. H. Muhammad Jusuf Kalla <i>Former Vice President of Republic Indonesia</i>
10.30 – 10.45	Photograph Session
10.45 – 12.25	<b>Pleno Session I (Invited Speakers 1-4)</b> Moderator : Prof. Dr. DN. Adhyana, APU.
10.45 – 11.05	1. Brig. Jen. Dato' Prof. Dr. Kamaruddin Hussin, Universiti Malaysia Perlis, <b>Green Technology Research for Volcano Mud.</b>
11.05 – 11.25	2. Prof. Dr. Ing. Suhadi Wiromojo, Technische Universität Berlin, <b>Transrapid Technology for Mass Transportation.</b>



Time	Program
11.25 – 11.45	3. Prof. Hyung Keun Song, Korea Institute of Science and Technology, <i>Bio-ethanol for Energy</i> .
11.45 – 12.05	4. Prof. Dr. Ir. Rokhmin Dahuri, Center for Coastal and Marine Resources Studies, Indonesia, <i>Coastal &amp; Marine Resources Technology</i> .
12.05 – 12.25	5. Prof. Dr. Andriwo Rusydi, National University of Singapore, <i>Application and Technology of Synchrotron</i>
12.25 – 13.25	<b>ISHOMA &amp; Poster Session</b>

Time	Program
13.25 – 14.45	<b>Pleno Session II (Invited Speakers 5-8)</b> Moderator : Prof. Dr. Teti Indrawati, MSi. Apt.
13.25 – 13.45	1. Prof. Dato Dr. Burhanuddin Yeon Majilis, Universiti Kebangsaan Malaysia, <i>MEMS and Nano Technology</i>
14.05 – 14.25	2. Prof. Dr. L. Broto Kardono, Indonesia Institute of Science, <i>Pharmaceutical Self Sufficiency</i>
14.25 – 14.45	3. Mejar (K) Hj. Mohd Kharir bin Mohd Ibrahim, Politeknik Port Dickson, <i>Heritage Architecture</i>
14.45 – 15.00	Coffee Break
15.00 – 17.00	<b>Oral Presentation - Session I</b> A1 – A7, Moderator Dr. Tiah Rachmatiah, MSi. Apt. B1 – B7, Moderator Dr. Ir. Endang Widjajanti, MT. C1 – C7, Moderator Dr. Ir. Setia Damayanti, MT.

November 20, 2013 (Wednesday)

Time	Program
09.00 -10.20	Pleno Session III (Invited Speakers 9-12) Moderator : Prof. Dr. Ir. Bambang Teguh Prasetyo, DEA. APU.
09.00 – 09.20	4. Prof. Dato' Ir. Dr. Zainal bin Mohamed, Universiti Teknologi Malaysia, <i>Technopreneurship.</i>
09.20 – 09.40	5. Dan David Fullict, PhD., Impactivity UK Ltd., <i>Mass Rapid System</i>
09.40 – 10.00	6. Prof. Dr. Awaludin Mohd Sharoun, Universiti Teknologi Malaysia,
10.00 – 10.20	7. Prof. Sang Chun Lee, Kyun Nam University, South Korea, <i>Education for Young Scientist</i>
10.20 – 10.30	Coffee Break
10.30 – 12.00	Oral Presentation - Session II A8 – A13, Moderator : Dr. Ir. Gendut Suprayitno, MM. B8 – B13, Moderator : Kartiko Eko Putranto, Dipl-Ing, DEA, PhD, C8 – C13, Moderator : Dr. Ir. Edy Supriadi, MBA
12.00 – 12.10	Closing Ceremony
12.30 – 13.00	Break for Pray
13.00 – 16.00	Laboratory Visit