Philippine Council for Industry, Energy and Emerging Technology Research and Development

PINOY INNOVATIONS

The PCIEERD Quarterly Newsletter

January-June 2014 (1st and 2nd quarter)

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ISO Certification Reaffirms PCIEERD's Quality Services

The PCIEERD management and staff (left) listen to Mr. Jayser Aquino, external auditor of TUV Rheinland (right) during the Stage 2 audit and re-certification of PCIEERD under ISO 9001:2008 in May. Also in photo is Ms. Marietta Sy of TUV Rheinland.

The Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) has been certified anew by the TUV Rheinland under ISO 9001:2008 last May 27, 2014.

The International Organization for Standardization or ISO is the world's largest developer of voluntary international standards. It is a non-government organization which gives state-o-f- the- art specifications for products, services and good practice to make agencies and industries more efficient and effective in their processes. There are different ISO standards used in different agencies, companies and organizations.

The PCIEERD aimed to be re-certified under the ISO 9001:2008 which ensures the quality management systems of organizations.

Since February 2014, the council has been preparing for the certification. Quality manuals and procedures were carefully reviewed and analyzed for implementation. For the preparation and integration of the employees, they were required to attend a seminar/workshop on ISO awareness. An internal audit was conducted after three months of preparations led by Engr. Nonilo A. Peña along with other internal audit members. Each process in the quality manual was examined and carefully checked based on existing processes.

Stages 1 and 2 audits were conducted by the external auditors from TUV Rheinland, Mr. Jayzer Aquino and Marietta Sy. All divisions were covered and interviews with concerned staff were conducted. Accordingly, Stage 2 only comes if the agency passes Stage 1 or be able to comply to some observations. Some observations were noted to which the management has taken immediate action for the Stage 2 audit. All the divisions prepared for the audit regarding the internal processes, from receiving project proposals until the transfer of technology, administrative activities and human resource/scholarship procedures for the Stage 2 audit done on May 26-27, 2014.

After the rigorous preparations and careful assessment of internal processes and procedures, Mr. Aquino announced that PCIEERD will be certified under ISO 9001:2008. *(Tony Rose Consignado)*

HIGHLIGHTS OF ENGAGEMENTS

Dr. Rowena Cristina L. Guevara
Executive Director, PCIEERD

January 28	PCIEERD Meeting with DOST Regional Directors and Consortia Heads, Crimson Hotel, Muntinlupa City
February 17- 20	ASIA-PACIFIC ECONOMIC COOPERATION (APEC) First Senior Officials' Meeting (SOM 1) and Related Meetings, Ningbo, China
February 21	e-ASIA JOINT RESEARCH PROGRAM 1st Scientific Advisory Council (SAC) Meeting, Kuala Lumpur, Malaysia
February 24-27	Visit to Hokkaido University to discuss details of Cooperation on Microsatellites Development and their Utilization, Sapporo, Japan
March 17	Speaker at IDEA Symposium (Topic: "How can Entrepreneurship be taught in Universities? Entrepreneurship in Engineering Curriculum"), Edsa Shangri-La, Mandaluyong City
March 27	PCIEERD Electronics Design Competition Final Judging and Awarding, Crowne Plaza, Quezon City
April 4	Keynote Speaker at PSHS-CVisC 5th Commencement Exercises, Argao, Cebu
April 21-23	67th ASEAN COST Meeting, Singapore
April 29-30	Roadshow on Iba na ang Panahon: Science for Safer Communities (S4SC) and Presentation of DOST Program on Responsible Mining, Surigao City/ Agusan del Sur/ Butuan City
May 29	4th CES Thought Leaders' Congress, Diamond Hotel, Manila
June 5	Speaker during the 11th Philippine Semiconductor and Electronics Convention and Exhibition (PSECE), SMX Convention Center, Pasay City
June 19	Press Conference on PCIEERD's 4th Anniversary Celebration, Sulo Riviera Hotel, Quezon City
June 22-26	Technology Tour in Japan, Ministry of Internal Affairs and Communications (MIC), Tokyo, Japan

Engr. Raul C. Sabularse
Deputy Executive Director

April 20-23	ASEAN COST meeting Singapore
April 24-26	Second Quarter Regular Board meeting of the National Bio-fuel Board (NBB) Negros Oriental, Dumaguete
April 29-May 02	Seminar on GIS UNESCAP UP Computational Science and Research Center UPD, Q.C.
May 08	Workshop on Microsatellite Development and TV Conference Dr. Takahashi Q.C. UP-EEE
June 03	SETUP meeting DOST Executive Lounge
June 03	Microsatellite meeting with Dr. Marciano and Teams UP-EEE, Q.C.
May 29-30	CESB Accredited Leadership training Program 2014 Strategic and Critical Thinking Berjaya Hotel, Makati Avenue Corner Eduque St., Makati City

Over 200 project proposals received for 2015

A total of 239 project proposals were received after the Philippine Council for Industry, Energy and Emerging Technology call for proposals on December 2013 to January 2014. Proponents from different sectors (academe, private institutions/ organizations, and researchers) entrusted their proposals to PCIEERD through the e-proposals submission.

Of the 239 project proposals received, ninety-five (95) were related to emerging technologies, particularly on nanotechnology. Sectors under the Energy and Utilities Systems Technology Development Division (EUSTDD) (i.e. energy, transportation, disaster mitigation) and the Industry Technology Development Division (ITDD) (i.e. food, environment, process, metals and engineering) received sixty (60) and sixty-two (62) project proposals, respectively. Meanwhile, Human Resources and Institution Development Division (HRIDD) received eight (8) project proposals while the Research Information and Technology Transfer Division (RITTD) received fourteen (14).

Following PCIEERD's evaluation process, a maximum of fifty-eight (58) working days are allotted for the initial assessment. All proposals undergo preliminary evaluation of a technical panel which will then go through the Governing Council and DOST EXECOM depending on the proposed budget.

All approved proposals will be included for funding in 2015.

The Call for Proposals encourages S&T collaboration and applied research among State Colleges and Universities (SUCs), government Research and Development Institutes (RDIs), non-profit S&T networks and organizations, and other proponents seeking funding for their R&D initiatives.

The PCIEERD research agenda is aligned to the government's policy directions for: (1) rapid, inclusive and sustained economic growth; (2) poverty reduction and empowerment of the poor and vulnerable; and (3) integrity of the environment and climate change adaption and mitigation. It also aims to contribute towards the achievement of the committed outcomes of the DOST. *(Tony Rose Consignado)*

PCIEERD revitalizes its Regional Consortia

Engr. Albert G. Mariño, Chief, Policy Coordination and Monitoring Division (PCMD), explains the objectives and components for the implementation of the PCIEERD Regional Consortia Program.

January 28, 2014 marks the revitalization of the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) Consortia. The event was conducted at the Crimson Hotel, Alabang, Muntinlupa City and was well-attended by different regional offices of the Department of Science and Technology (DOST), member state universities and colleges (SUCs) and technical monitors from PCIEERD.

The consortia revitalization addresses the harmonized national R&D Agenda of DOST. Dr. Rowena Cristina L. Guevara, Executive Director of PCIEERD, elaborated on this agenda in her opening remarks, saying that it must consist of projects

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that are resource-based, technology driven and sustainably developed. These criteria must be considered and incorporated in the consortia's S&T Agenda.

Dr. Guevara enumerated and expounded further the contents of the harmonized R&D Agenda. This consists of two major programs; one is poverty alleviation and inclusive growth which consists of food security, countryside development, biodiversity conservation and sustainable development, competitive industries and delivery of social services. The second is climate change mitigation and adaptation and disaster risk reduction which includes innovations in weather and flood forecasting and climate change modeling, water security, water resource assessment and management, climate resilient agriculture, climate change mitigation, disaster risk reduction, and urban planning and hydrological dataset.

A brief presentation about the requirements and criteria to be considered in preparing the S&T Agenda of each consortium was given by Engr. Albert G. Mariño. He explained the objectives and components for implementation of the PCIEERD Regional Consortia Program. After the presentation, an open forum was conducted wherein regional directors and SUC members were given the chance to ask, validate or confirm their questions regarding the presentation.

To inspire other Regional Consortia, the council chose two active consortiums to present their accomplishments and future priorities. These were the Ilocos Consortium for Industry and Energy Research and Development (ICIERD) and Southern Tagalog Consortium for Industry and Energy Research and Development (STCIERD). *(Tony Rose Consignado)*

PCIEERD 4th Anniversary Forum Focused on Technology Investment Opportunities

Senator Cynthia A. Villar, Vice Chair of the Senate Committee on S&T was the Guest of Honor during the PCIEERD 4th anniversary. An accomplished entrepreneur, she said that DOST is close to her heart and believes science and technology can indeed pave the way for the country's progress.

On its 4th anniversary, the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) encouraged investors, stakeholders, and every Juan and Juana to invest in R&D outputs. A forum entitled "Juana Invest? Reaping the Returns from R&D" which featured selected presentations on starting a business, technology entrepreneur stories, success stories, investment financing, and a portfolio of investment opportunities from its R&D projects was conducted on the 27th of June, at the Edsa Shangrila Hotel, Ortigas Center.

PCIEERD invited Resource Persons who paved the way to investments based on their experiences. The guest of honor, Senator Cynthia Villar, is an accomplished entrepreneur who has also built livelihood opportunities for her constituents. She is also the Vice-Chair of the Senate Committee on Science and Technology.

As the guest speaker, Dr. Gonzalo C. Serafica further enlightened everyone on the importance of investing in science and technology. Dr. Serafica is an expert on Biocellulose technology and is currently working with a number of DOST agencies and other universities as a Balik Scientist.

A lineup of technology investors and entrepreneurs also shared their success stories. On the other hand, topics like technology financing schemes as well as models for start-up business completed the whole picture from investment to financing.

For the breakout sessions, distinguished experts and speakers from different sectors such as energy, food, minerals and materials and ICT presented their products and inventions. Some of the innovations presented are the ceramic water filter, natural dye, solar energy devices, probiotic feeds and others.

The PCIEERD 4th anniversary was graced by the Undersecretary for S&T Services, Prof. Fortunato T. Dela Peña. *(Janina Myn Villapando)*

PCIEERD Offers More Training Grants

In its effort to further advance the capability of fellow Filipinos in science and technology, the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) continues to extend and intensify its support to members of the National Science Consortium (NSC) and the Engineering Research and Development for Technology (ERDT) institutions and SUCs, DOST R&D Institutes (RDIs), Regional Offices (ROs), and Sectoral Planning Councils and Service Institutes through its 'Bridging the Human Resource Competency Gaps In Support of the National R&D Agenda' program. Under the said program, PCIEERD grants financial support to scholars, faculty, researchers, and technicians working in areas supportive of the National R&D Agenda for non-degree short term trainings abroad. They support individual trainings, the Sandwich Program and postdoctoral fellowships. It also covers teacher training on ICT-enabled teaching for elementary teachers of the Department of Education (DepEd).

As of May 2014, PCIEERD already received a total of 35 applications for individual trainings abroad. Sixteen individuals already completed their training through the program's funding support with two still on-going and two more have been approved. Under the Sandwich Program, PCIEERD is currently funding two on-going with two others already completed. There is also a group training hosted by the Science Education Institute (SEI) which is on-going for teachers from the DepEd.

The grant covers the economy roundtrip airfare including local transfer, daily subsistence allowance for trainings not exceeding 14 days or monthly living allowance with transportation, accommodation, and food included for trainings beyond 14 days. This also includes the training fees, travel and health insurance and incidentals such as visa fees.

All those who wish to apply for the said program must be a Filipino citizen, preferably not more than 50 years old as of March 15, 2014 with an MS or PhD degree in any Science or Engineering course relevant to the identified training and is of good mental, emotional, and physical health. He or she should have served at least three years in any unit or laboratory of the sending institution and must have been with his or her respective project for at least six months. In the event that he or she did not comply with the length of service required, a strong endorsement from the institution is needed.

For more details, the Human Resources and Institution Development Division (HRIDD) of PCIEERD may be contacted at telephone numbers 837-7522 or 837 2071 loc 2101, email: pcieerdhridd@gmaill.com or ermie_scmst@yahoo.com. *(Arlyn Joy Amata)*

New Division Chiefs Appointed

Ms. Sonia P. Cabangon (left), the long time budget officer of the then PCIERD was appointed as Chief of the PCIEERD's Finance and Administrative Division (FAD) last Febuary 2014. With her is PCIEERD Executive Director, Dr. Rowena Cristina L. Guevara, during her contract signing.

Ms. Russell M. Pili, a former Senior Science Research Specialist of PCIEERD's Industrial Technology Development Division (ITDD-Process Sector), took her oath of office as Chief of the Research Information and Technology Transfer Division (RITTD) last March 2014. With her are (left) Engr. Nelson P. Beniabon, Chief, Emerging Technology Development Division (ETDD), Dr. Guevara and Ms. Sonia Cabangon (right).

Students challenged in PCIEERD's Electronics Design Competition

Pinoys are innovators indeed. The 1st Electronics Design Competition (EDC) of PCIEERD showcased the skills and talents of young Filipinos in developing designs that are aligned with DOST's Smarter Philippines program. The EDC has given high hopes and inspiration to the young engineers to pursue their careers and build their own markets in the electronics industry of the country.

The competition, which was launched during PCIEERD's anniversary in 2013, challenged teams of undergraduate electronics, electrical, and computer engineering students from universities and colleges all over the Philippines who went head-to-head with their own innovative and practical solutions to different pressing national problems. From more than 70 entries, 18 were chosen to have a chance at converting their designs into actual prototypes.

The final judging and awarding ceremonies of the EDC was conducted last March 27, 2014 at the Crowne Plaza Manila Galleria Hotel. Attended by the talented student engineers and their advisers who came all the way from their schools all over the Philippines, the 18 finalists presented their designs and demonstrated how their electronic prototypes work. The 18 finalists are as follows:

Team Name	Title of Entry	University Name
Team 3S	Prepaid Energy Meter - 3S (Safety, Security, SMS)	Manuel S. Enverga University Foundation
DAGITAB	Predictive Power Monitoring System for Energy Management	Ateneo de Manila University
HELIOS	Real-time energy monitoring of PV systems implementing grid-tied inverters for energy management, energy efficiency and system design optimization	Ateneo de Manila University
KUYA DERMS	Wireless Smart Power Strip	University of the Philippines
LASALLIAN ANDROID BUSTERS	Design and Implementation of a Smartphone-based Oximeter in the Android Platform	De La Salle University – Science and Technology Complex
Low-Cost WiFi Based BEMS	Low Cost Wi-fi Based Building Energy Monitoring System	University of the Philippines
MANUS FACTUS	Philippine Berries as Natural Sensitizers for Dye-sensitized Solar Cells	Bulacan State University
MAS WAIS	MAS WAIS (Smarter): Multi - Appliance Switching thru Wireless Automation Integrated System	Batangas State University
Team MICE	Intelligent Wireless Distribution Transformer Load Monitoring System	Mindanao State University- Iligan Institute of Technology
MSC MORIONES	Microcontroller-based Wireless Sensor Network (WSN) for Lighting Control System	Marinduque State College
BANGON KALI	Smart Energy Monitoring and Control System for Residential Application	Mindanao State University- Iligan Institute of Technology
Team RAL	3D PrintEarth: A Linear Delta Robot as a 3D Printer with Scrap Plastic from Bottles as its Printing Material	University of the Philippines
ROARING WOLVES	Arduino-Based Power Management System	Mindanao State University – Iligan Institute of Technology
RTU-ECETSS	Homebrew Microcontroller-based Solar/ Wind Power Generator	Rizal Technological University
SSU ENGINEERING BLASTER	Design and Development of Electric Consumption and Monitoring System	Samar State University
SSU ENGINEERING GSM POWER BUILDER	Design and Development of Electric Consumption and Monitoring System	Samar State University
TIP-QC	An Automated Water Hyacinth Extractor and Processor Machine for Bioethanol Production	Technological Institute of the Philippines
Westmead International School	Smart Socket Using RF and GSM Technology	Westmead International School

The much awaited awards were presented for the top three winners of the 1st Electronics Design Competition.

The winners:

1st Place
Title Entry: "3D PrintEarth: A Linear Delta Robot as a 3D Printer with Scrap Plastic from Bottles as its Printing Material"
Team Name: Team RAL
School: Electrical And Electronics Engineering Institute, University of the Philippines Diliman
Faculty Adviser: Dr. Manuel C. Ramos, Jr.
Team members: Juan Paolo E. Espiritu, Martin Jude Z. Borja, Carissa Norielle L. Cruz, Emilio Vicente T. Gomez, Kevin Matthew B. Yatco

This project aims to lower the cost of 3D printing by designing a cost-friendly 3D printer which uses scrap plastic instead of expensive material.

2nd Place
Title Entry: "Low Cost Wi-fi Based Building Energy Monitoring System"
Team Name: Low-Cost WiFi Based BEMS
School: Electrical And Electronics Engineering Institute, University of the Philippines Diliman
Faculty Adviser: Dr. Jhoanna Rhodette Pedrasa
Team members: Anna Katrina O. Gomez, Dan Neil Q. Ramos, Anthony Kristianne G. Tang

The project provides energy consumption visualization for building administrators. It is low-cost and requires minimal changes in the electrical infrastructure of a building unlike similar commercially available products in the market today.

3rd Place
Title Entry: "Homebrew Microcontroller-based Solar/Wind Power Generator"
Team Name: RTU-ECETSS
School: College of Engineering and Industrial Technology, Rizal Technological University
Faculty Adviser: Engr. Wilfredo L. Timajo
Team members: Renz Benhar O. Bobadilla, Rhenne-Ann A. Orayan, Florimund Bryan G. Garalde, James Brandon G. Masikip, Enrico C. Feliciano

The Homebrew Microcontroller-Based Solar/Wind Power Generator harvests energy from readily available sources such as solar irradiance and gusty winds to help cut down the cost of electricity. Most of the materials used in the project are recycled.

Some designs were also given special recognition for its creativity, innovativeness and the presentation of the students. Special Awards were given to the following:

Special Award for Innovative Idea (Innovativeness)
Title Entry: "Blast Fishing Alarm System"
Team Name: SSU ENGINEERING BLASTER
School: College of Engineering, Samar State University
Faculty Adviser: Engr. April Cathy Sumayan
Team members: Christian P. Abuda, Rosette Munez, Jorell Niego, Melody P. Nuevo, Niko Ocenar

The Blast Fishing Alarm System is a fast detecting system for underwater blasts, which makes use of a low-cost hydrophone as well as an automatic and effective alarm which sends out specific information of blast fishing events to enforcement agencies.

Best Presenter
Title Entry: "Smart Energy Monitoring and Control System for Residential Application"
Team Name: BANGON KALI
School: Mindanao State University – Iligan Institute of Technology
Recipient: Mr. Gil Michael E. Regalado

The Smart Energy Monitoring and Control System for Residential Application features an online monitoring system for both consumers and distribution utilities. It provides information which includes, but is not limited to, billing details, date of disconnection, automatic reconnection, and daily load consumption. *(Mary Joy Buitre)*

Free Training on Advanced Machining Offered

There is currently a pressing national problem on brain drain, particularly of computer numerically controlled (CNC) machining skilled workers (machinists, programmers and operators). Insert stats on manpower needs and skilled workers leaving the country

The Department of Science and Technology (DOST) through the Metals Industry Research and Development Center (MIRDC) is currently implementing the project titled , "Human Resource Intervention for Sustainable Growth and Competitiveness of the Metals and Engineering Sector: Development and Implementation of Appropriate Training Curriculum Design for CNC Machine Tool Programming and Operations" to keep machining skilled workers in the country.

The undertaking involves development and implementation of an effective training curriculum to ensure the availability of competent CNC programmers and operators to meet the manpower requirement of the domestic metalworking firms. The 62-day training program includes basic to complex machining skillls, which are further honed through actual industry immersion.

The Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) serves as the monitoring agency in the implementation of the project. Several institutions/ organizations are supporting the project such as the Technical Education and Skills Development Authority (TESDA), Metalworking Industries Association of the Philippines, Inc. (MIAP), Philippine Die and Mold Association, Inc. (PMAI), Aerospace Industries Association of the Philippines, Inc. (AIAP), Iloilo Science and Technology University (ISAT-U) and Don Mariano Marcos Memorial State University (DMMMSU)-La Union were also tapped to facilitate the nation-wide implementation of the training program.

The MIRDC CNC training facility, seven (7) Regional Training Centers of TESDA in different locations (NCR, CAR, Batangas, Talisay, New Lucena, Cebu and Davao), and two (2) conventional machining facilities of universities (in ISAT-U & DMMMSU) which were utilized as training centers are expected to produce 800 CNC machinists/ programmers/ operators by December 2014. To date, a total of 360 participants finished the training program and about 240 more, to graduate by end of August 2014. MIRDC still accepts application to fill in the batches of trainings to be conducted in the final quarter of the project. Qualified applicants are preferably those with basic knowledge and skills in conventional machining (turning or milling) and basic computer operations. In addition, applicants must either be high school graduates with machining course from TESDA or TESDA-accredited training institutions; vocational/ trade course graduates (preferably Mechanical Technology or related course); or college level students who have completed at least two years of studies, preferably in an engineering course.

The training is free for unemployed participants and a daily stipend of P300.00 is provided to trainees for the entire duration of the CNC Training Program. *(Eidel Quinn Eda)*

PNRI Develops Capability in Electron Beam Technology Applications

Electron radiation processing involves modification of the structure and properties of a material using electrons of high energy. During the process, cross-linking of molecules in various substrates is induced by radiation from electron beams. Similar to the old process that uses chemicals which hardens, cure, or change the composition of polymers and plastic based products; radiation from electron beams strengthens/reinforces the materials; thereby, making them more resistant to corrosion, heat and chemical damage. Notable applications are in industries involved in making tires, wires, cables, batteries, fabrics, paints and food packaging.

Like the gamma radiation sources, electron beams have been employed worldwide by both developed and developing countries, for R&D, commercial and industrial applications. In recent years, however, the electron beam technology has surfaced as more advantageous source since it produces higher dose rates that speed up the irradiation process, resulting to high throughput. This opens the doors to more potential applications such as better waste management, nanotechnology and enhancement of quality of products like automobile parts, plastics, fibers and semiconductors – in addition to the already well-proven capabilities of gamma radiation.

To better serve the industries in the country, the Philippine Nuclear Research Institute (PNRI) is currently establishing an Electron Beam Irradiation Facility with the help of donations from the US and Japanese governments as well as from the International Atomic Energy Agency (IAEA). The IAEA is also providing technical assistance to PNRI.

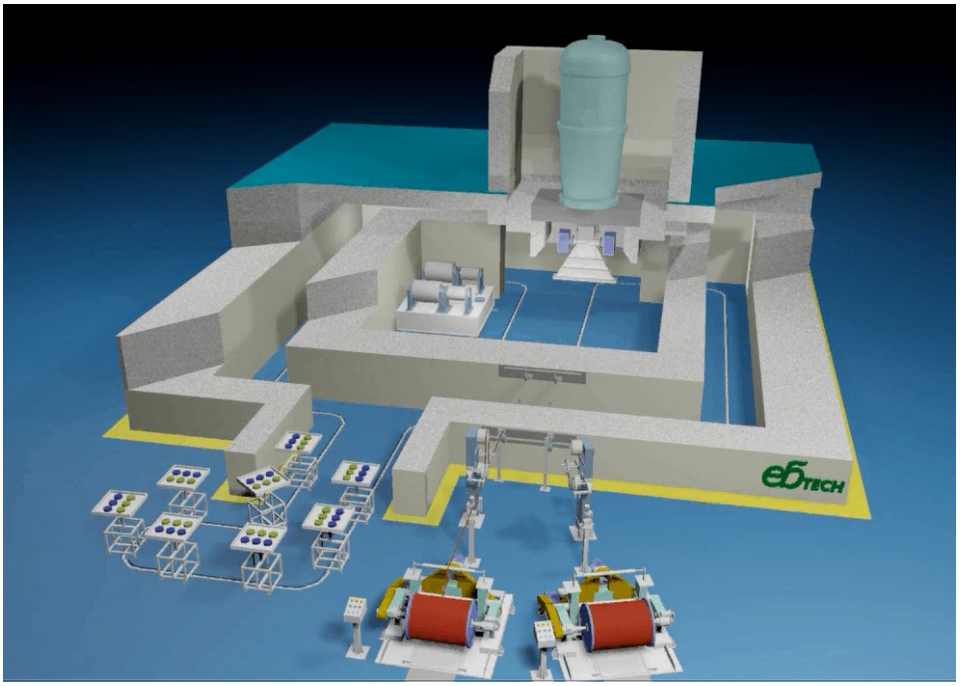
The 2.5 MeV electron beam facility will be PNRI's addition to its existing Cobalt-60 Multipurpose Irradiation Facility (MIF). This will be the first electron beam irradiation facility in the country that is intended for full-scale R&D and semi-commercial irradiation services. Along with the establishment of this facility is human resource development which involves training of staff and conduct of R&D activities such as synthesis and characterization of polymers and development of radiation sterilized honey-alginate wound dressing. In line with this, PNRI scientists also aim to develop metal ion adsorbents for water purification, catalysts for desired chemical reactions and chemical sensors, among others. These involve polymer grafting where desired polymer chains/ substrates are "grown" on the surfaces of the main polymer/material.

Facility's enclosure

Ms. Luvimina G. Lanuza, PNRI's Supervising SRS/Head of Irradiation Services serves as project leader for the said capability-building undertaking. The project was included under the DOST-GIA funding with the Human Resource and Institution Development Division of PCIEERD-DOST as monitor.

With the facility and a pool of trained personnel in place, as well as with constant collaboration with the IAEA and other donor countries, it is hoped that the institute's capability will soon be at par with other ASEAN countries that have long been using the same facility.

Considering the recent disasters and calamities in the country, practical applications of electron beam radiation involve production of shelf-stable food for emergency rations, production of nanogels for delivery of topical drugs and production of functional materials for wastewater treatment. *(Eidel Quinn Eda)*



Design of PNRI's Electron Beam Irradiation Facility

Balik Scientist Makes Chemistry Easy

Chemistry is one of the most challenging subjects in high school dreaded by students. Similarly, teachers encounter challenges in simplifying complicated terminologies and lessons in Chemistry. One problem associated with this is the inadequacy of having Chemistry and Chemistry 101 instructions in schools nationwide, primarily in public schools.

To address this, the Department of Science and Technology (DOST) under its Balik Scientist program invited Prof. Corazon S. Salumbides, a US-based Chemistry educator, to improve Chemistry instruction in schools. Her expertise is in microscale technique in teaching the subject. Prof. Salumbides developed the Hands-On Minds-On Microscale Chemistry (HOMOMICH), a student-centered teaching method. It seeks to make Chemistry fun to learn through the use of the LABoratory in a Box (LAB BOX) which contains 50 pipettes, 25 plastic cups, 30 straws, 25 acetate films, and baking powder among others. With the materials in the kit, students can easily perform experiments with fun and have a hands-on experience on learning Chemistry.

Under the auspices of the program, Prof. Salumbides led a series of workshops in selected provinces across the country. The workshops focused on the HOMOMICH to train Integrated Science teachers about the microscale technique. Further, it involved equipping teachers with materials, such as the LAB BOX kit.

Balik Scientist Prof. Corazon S. Salumbides (center), a US-based Chemistry educator and expert in microscale technique of teaching Chemistry, receives her Certificate of Appreciation from PCIEERD Executive Director Rowena Cristina L. Guevara (left) after her exit presentation in May 2014. Present during the presentation was Engr. Filemon T. Berba (right), President of the Phil. Foundation for Science and Technology (PFST), the host institution of Prof. Salumbidesa

Currently, an instructional video including lessons about HOMOMICH activities is being developed in partnership with the Science and Technology Information Institute (STII). This material funded by the Philippine Council for Industry, Energy and Emerging Technology Research and Development (PCIEERD) involves lessons personally selected by Prof. Salumbides.

In line with the Balik Scientist program, the first series of workshops were conducted from October 2012 to November 2012 where 324 Science and Chemistry teachers from Ilocos, Western Visayas, National Capital Region and Eastern Visayas participated. Likewise, the second series of workshops were held from April to August 2013 which involved 515 teachers as participants. Such were conducted in Batangas City; Marikina City; Tanauan, Batangas; and Quezon City. From the 839 teachers trained, 83 were able to have their personal LAB BOX kits. Fifty-eight from these were sponsored by UNESCO and SEM Calaca Power Corp. while 25 were purchased by the teachers using their personal money or via their school funds.

Meanwhile, eight (8) HOMOMICH workshops were also conducted nationwide from January 28 to May 24, 2014. Specifically, these were held in Roxas City, Philippine Science Centrum, FEATI University, Batangas, and Iloilo City. A total of 153 high school teachers, 140 elementary teachers and 40 high school students were trained under this year's workshops. Out of the 293 teachers who participated, 100 were able to take-home the LAB box kits.

With their newly acquired knowledge about teaching Chemistry in an enjoyable manner, the teachers who took part in the highly-commended workshops gained more confidence in their delivery of the subject. Likewise, with interactive approach and introduction of the LAB BOX kit by Prof. Salumbides, the teachers and students alike were able to further appreciate the beauty of this dreaded subject. Now, teachers can teach more effectively Chemistry and make it appealing for students.

Prof. Corazon S. Salumbides completed her undergraduate degree in Chemistry from Centro Escolar University, Manila before earning her M.A. in Secondary Education at University of San Francisco, USA. Also, she has an M.A. degree in Education Administration from San Francisco State University, USA. As a "Balik Scientist", her host institution is the Philippine Foundation for Science and Technology. *(Edgilyn Alcasid)*

PCIEERD Conducts Nationwide Pre-implementation Orientation on Philippine LIDAR Program

The PCIEERD is currently monitoring two big ticket R&D programs under its Science Technology Application (STA) sector - PHIL LIDAR 1: Hazard Mapping of the Philippines using LIDAR and PHIL LIDAR 2: Nationwide Detailed Resources Assessment using LIDAR. These DOST-GIA funded programs are the expansion programs of the ongoing Nationwide DREAM Program, which is expected to be completely done at the end of this year.

PHIL LIDAR 1 aims to cover the other river basins not covered by the DREAM Program to produce high-resolution flood hazard maps and flood inundation models. This will finally address the needs for disaster mitigation of the whole country. PHIL LIDAR 2, on the other hand, shall produce high resolution maps of various natural resources of the country such as agricultural resources, coastal, forestry, hydrological data sets and renewable energy resources. These maps will update and aid the national government agencies to enhance their planning and management of the country's resources nationwide.

With these R&D programs in place, the PCIEERD monitoring staff and representatives from its Finance and Administrative Division (FAD) together with the DOST Special Projects Division (SPD) conducted a series of pre-implementation orientation for the 16 implementing agencies from state universities and colleges (SUCs) and higher education institutes (HEIs) all over the country. The conduct of a pre-implementation orientation for the implementing agencies is one of the crucial tasks of PCIEERD Technical Monitors. Its objective is to ensure that the implementing agencies shall abide with the rules stipulated in the DOST Administrative Order No. 005, Series of 2013, also known as the "Revised Guidelines for the Grant-In-Aid Funds of DOST and Its Agencies." This guideline is a helpful tool for the researchers to effectively manage their R&D projects during the implementation.

The following pre-implementations were conducted:

LUZON CLUSTER:
Central Luzon State University (CLSU) – May 22
Isabela State University (ISU) – May 22
Mapua Institute of Technology (MIT) – May 30
University of the Philippines in Los Baños (UPLB) – June 13

VISAYAS CLUSTER:
Visayas State University (VSU) – June 6
UP Cebu – June 6
University of San Carlos (USC) – June 6

MINDANAO CLUSTER:
UP Mindanao – June 18
Caraga State University (CaSU) – June 18
Ateneo de Zamboanga (AdZU) – June 18
Mindanao State University-Iligan Institute of Technology (MSU-IIT) – June 18
Central Mindanao University (CMU) – June 18

Pre-implementation orientations scheduled in July are for Ateneo de Naga (AdNU), UP Diliman, UP Baguio and Mariano Marcos State University (MMSU).

In the pre-implementation orientation for the Mindanao Cluster (as shown in above photo) attended by PCIEERD Executive Director, Dr. Rowena Cristina L. Guevara, she said that only few universities which she considers as "early adapters" were able to get huge funding from the PHIL LIDAR programs. "We want the (PHIL LIDAR) Mindanao Cluster solid, to cooperate with each other and ensure nothing is lost along the way" she said during her opening remarks. *(Mary Joy Buitre)*

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