



ISSN: 1655-9614
VOL. 38 NO. 1
JAN - JUN 2018

TECHNO Bulletin

The official Newsletter of the Industrial Technology Development Institute published semi-annually

DOST-ITDI Seafood technologies showcased at IFEX 2018



On May 25-27, 2018 at the World Trade Center Metro Manila and Philippine Trade Training Center, DOST-ITDI joined IFEX 2018 where its seafood technologies and related technical services were showcased, befitting the event's theme, *"Best of the Seas."*

A perfect sourcing spot for food businesses, ITDI featured the DOST-ITDI Seafood Innovation Hub, designed as the space where food entrepreneurs, consumers, and government technology generators can meet to encourage food innovation using locally available resources. It was also where food startups can get ideas or solutions to help develop their businesses; allowing consumers and businesses to discover and interact with the latest seafood innovations and technical services, and raise awareness of their availability with key stakeholders.

The following line up took center stage at ITDI's Seafood Hub:

I. Marine-based food technologies from local resources

- Vacuum-fried mussels (*tahong*)/anchovies (*dilis*)
- Bottled milkfish (*bangus*)/*tuyo* in oil
- Chilled smoked milkfish (*tinapang bangus*)



ITDI groundbreaking kick-starts service facilities for 2018

On 17 January 2018, a symbolic groundbreaking kick-started realization of the Industrial Technology Development Institute's project on three service facilities.

Two NML extension facilities for the so-called Metrology in Chemistry and Metrology in Biology, will be fixed next to the existing NML building. Also to be renovated is the TSD building, which will house the CED (Chemicals and Energy Division) laboratories and offices, and the multi-industry modular innovation center or Inno Hub.

The ceremony was graced by DOST officials led by Secretary Fortunato T. dela Peña accompanied by Undersecretary for R&D Rowena Cristina L. Guevara. Both officials gave their messages of goodwill and encouraged everyone to continue working for the good of DOST and its advocacies. A closing note from Dr. Diana L. Ignacio, Officer-In-Charge (OIC) of the Office of the Administrative and Technical Services Division, ended the day's ceremonies.



DOST Secretary Fortunato T. dela Peña giving his message of goodwill.

Photo Credit: DDGotis

Witnessing the occasion were ITDI officials and staff, led by Dr. Annabelle V. Briones, OIC of the Office of the Director and Deputy Director for R&D, and representatives from the media, project leaders, and contractors. (DDGotis)



DOST-ITDI, San Miguel Yamamura Asia Corp ink MOA



Left frame: DOST-ITDI OIC-OD, Dr. Annabelle V. Briones (second from right), together with Deputy Director for Administrative and Technical Services Dr. Diana L. Ignacio signed an accord with San Miguel Yamamura Asia Corporation (SMYAC) represented by its AVP and Plant Manager Engr. Jonathan C. Aquino (second from left), and Finance Manager Rico O. Baro. Right frame: The signatories flanked by officers and staff of MSD-ITDI and MSYAC.

DOST-ITDI and San Miguel Yamamura Asia Corporation (SMYAC) recently inked an agreement to collaborate in development of scratch-resistant and highly durable glass containers through use of nanotechnology.

OIC and Deputy Director for R&D, Dr. Annabelle V. Briones, represented DOST-ITDI together with Deputy Director for Administrative and Technical Services Dr. Diana L. Ignacio. Meanwhile, SMYAC was represented by its Assistant Vice President and Plant Manager Engr. Jonathan C. Aquino and Finance Manager Rico O. Baro. Dr. Blessie A. Basilia, chief of the Materials Science Division at DOST-ITDI, and Engr. Gilbert S. Alvarez of SMYAC stood in as witnesses.

▶ 6

ITDI, Stoneworks join forces to improve the Philippine boating industry with abaca composites

On June 21, 2018, DOST-ITDI signed another Memorandum of Agreement (MOA) this time, with Stoneworks Specialist International Corporation (SSIC) to fabricate and evaluate the performance of ITDI's abaca fiber-reinforced composite technology for use in the boat-making industry.

Signing the MOA were ITDI Deputy Director for R&D and OIC- Office of the Director, Dr. Annabelle V. Briones; Material Science Division (MSD) Chief SRS, Dr. Blessie A. Basilia; Planning and Management Information Systems Division's (PMISD) OIC-Chief Supervising SRS, Dr. Zorayda V. Ang; MSD's SupSRS and Scientist I, Dr. Marissa A. Paglicawan; and SSIC President and CEO, Ms. Marilyn Ong. Also observing and assisting during the MOA signing were PMISD's Andrew Cruz and MSD's Carlo Emolaga.

Established in 1997 as stone and cast polymer maker, Design Stone –SSIC has quickly grown to become one of the Philippines' largest manufacturers and distributors of designer stone and various custom fiberglass products for architectural, marine, industrial, and commercial purposes with established markets nationwide. *(RRUdelaCruz)*



(L-R, seated): Dr. Z. Ang, OIC-PMISD, ITDI; Ms. M. Ong, SSIC President & CEO; Dr. A. Briones, Deputy Director for R&D and OIC-OD, ITDI; Dr. B. Basilia, Chief, MSD, ITDI; & Dr. M. Paglicawan, Scientist 1, MSD, ITDI.

Photo Credit: RRUdelaCruz

Dr. Ochona: 2018 Outstanding Practitioner in Laboratory Animal Practice



Cynthia M. Nalo-Ochona, DVM, MSc, RMT, Head of the Biological Laboratory of the Standards and Testing Division of ITDI has been awarded the **2018 Outstanding Practitioner in Laboratory Animal Practice** by the Veterinary Practitioners Association of the Philippines (VPAP).

Dr. Ochona is an expert on pharmacological and toxicological testing. She received the award on June 14, 2018 at the Crowne Plaza Galleria Manila, Pasig City.

Congratulations! (*ACDablio*)

Ohio U short course on natural dyes, colorants re-echoed

Photo credit: PCIEERD 2014



The Industrial Technology Development Institute (DOST-ITDI), in cooperation with the Food and Nutrition Research Institute (DOST-FNRI), and the Philippine Textile Research Institute (DOST-PTRI), re-echoed a Short Course they attended at the Ohio State University (OSU), a public research university in Athens, Ohio, United States.



Held on February 1, 2018 at the PTRI Training Room, the lecture-workshop was conducted under the auspices of the Philippine Council for Industry, Energy, and Emerging Technology Research and Development (DOST-PCIEERD).

With 100 participants from various agencies and the DOST Regional Offices in attendance, the short course focused on development of dyes for food and textile applications, among others.

Seven speaker-researchers from ITDI (4), FNRI (2), and PTRI (1) treated guests to a presentation on several topics of current interest.

Ma. Dolores L. Villaseñor, Supervising SRS and Head of the Product Development Section at FPD, discussed the Areas of Colorant Research at OSU. Zaila Payag of PTRI followed with the Major Classes of Pigments. Dr. Rosalinda C. Torres, Scientist I and Chief of STD, presented her techniques on Extraction and Purification.

Two subtopics under Characterization and Measurement were discussed by FNRI's Alfee B. Capule for Colorimetry and Trinidad II Arcangel for Chromatography. A third subtopic, Spectroscopy was presented by Christopher Andrew G. Bilbao, an SRS II also at the Product Development Section of FPD. In conclusion, Evelyn Manongsong, a Senior SRS at the Pharmaceuticals Section of CED, covered the topic on Application of Natural Dyes.

PTRI Director Celia B. Elumba formally closed the lecture-workshop. (*AMGuevarra*)

ITDI groundbreaking... *from p. 1*



NML extension facilities and CED/Innohub under construction

DOST-ITDI technologies featured in major TV programs

In efforts to rev up promotion of DOST technologies and services, these are finding exposure in current TV programs hosted by major TV networks in the country, made possible through the efforts of DOST's STII (Science and Technology Information Institute) and the DOST Media Core which is composed of information and communication specialists from all DOST agencies.

Recently featured from ITDI were the following technologies:

- ITDI's *ceramic water filter with nano antimicrobial agent* was featured in **GMA-7 Pinoy MD** with Ms. Suzy Entrata Abrera. Interviewed was DOST-ITDI Deputy Director for Research & Development and currently OIC of the Director's Office, Dr. Annabelle V. Briones (R).



Also on cam was Dr. Blessie Basilia (L), Chief of ITDI's Material Science Division (MSD), whose team developed the ceramic water filter with nano antimicrobial agent.

Photo Credit: Henri de Leon, STII

- Also featured in Pinoy MD was *Pack of Hope RTE (Ready-to-Eat) chicken arroz caldo* with technology developer, Supervising Science Research Specialist Pinky Loberiano (R) of ITDI's Packaging Technology Division.



- 4C Oil Spill Adsorbent*, ITDI's new and green reversing technology to remove oil spills from oceans was featured in *greenliving*, a lifestyle TV show on sustainable urban living aired over **ABS-CBN News Channel**.

Developed by Dr. Emelda A. Ongo, OIC of the Chemicals and Energy Division and head of the Pharmaceuticals Section, 4C Oil Spill Adsorbent is a mixture of chitosan (a by-product of chitin from shells of shrimp, crab, or lobster) from shrimp and calcium carbonate from eggshells for use as biosorbent.



- TRIBE, NET25's** youth-oriented TV magazine show featured DOST-ITDI's *food colorant from rice*. Dr. Ursela P. Guce-Bigol, Supervising Science Research Specialist of ITDI's Environment and Biotechnology Division (EBD) talked about food colorant from rice fermented with *Monascus purpureus*, a strain of mold. Known as ang-khak rice mold, corn silage mold, or rice kernel discoloration, it is a good and safe source of food-grade pigment/dye with potential application in food, beverage, and cosmetics industries.

Upper left frame: The TRIBE Logo. Right frame: Nicole S. Facal, director/producer of TRIBE, NET25's youth-oriented TV magazine show, going over the script with Dr. Ursela P. Guce-Bigol, project team leader. Lower left frame: Rice fermented with *Monascus purpureus*.



Photo credit: DDGotis

2018 ITDI Techno Audit on track

The ITDI technology auditing team headed by TSD Chief Nelia Elisa C. Florendo has been conducting a series of divisional technology audits since March 19, 2018.

Three consecutive audits were completed with Materials Science Division (MSD), Chemicals and Energy Division (CED), and Environment and Biotechnology Division (EBD) as the first three on the list with the following audited technologies.

1. Low-cost modular rainwater collection system
2. Modified nano-zeolite for water and wastewater applications
3. Waste rubber crumb for construction application
4. Solar biomass for multi-heating applications
5. Improved formulation and bio-assay of natural mosquito repellent lotion and spray for babies and children
6. R&D studies on *Jatropha curcas* pressed cake for use as animal/poultry feeds
7. Production of plant oils and methyl ester using SCFE and performance testing of the continuous-type biofuel reactor with the production of methyl ester from *Jatropha curcas*' seed oil
8. Development of a hybrid portable solar still for potable water in rural areas and thermal processing of industrial wastes
9. Determination of volatile compounds of macapuno meat using SDE-GC and SPME-GC
10. Scale-up production and performance testing of biolubricants and scale up production and application testing of alkyd resin from *Jatropha curcas*' oil
11. Aerobic treatment of pre-digested swine wastewater using activated sludge and subsequent polishing using biological filters/trickling filter system
12. Emergency disinfection system for drinking water
13. Association of metal in food and water resources in volcanic impacted areas
14. Removal and decomposition of water-soluble diesel oil fraction by TiO_2 photocatalysis
15. Zeolite adsorbent for oil sheen decontamination

Other divisions will undergo the activity soon. Since the audit's start, a total of 15 technologies have been assessed and audited.

The audit forms part of the TSD project entitled *"Pilot Implementation of ITDI's Pre-Commercialization Tools/Strategies for Effective Transfer and Commercialization of Generated Technologies and Intellectual Properties"* that aims to assess the level of readiness and viability of the institute's developed technologies prior to technology transfer and commercialization. **(DDGotis)**



Photo Credit: ABArante

PH, DOST-ITDI mark 2018 World Metrology Day

On May 20, 2018 the Philippines, through DOST-ITDI, joined 80 countries worldwide in the commemoration of the 2018 World Metrology Day.

Themed as *"Constant Evolution of the International System of Units"* the celebration reflected what will be one of the largest changes to SI since its inception. Further, May 20 credits the signing of the Metre Convention in 1875 where formal international collaboration in metrology began, and which created the International Bureau of Weights and Measures (BIPM). Today, the original aim of the Metre Convention – the world-wide uniformity of measurement – remains as important as it was then.

As well, May 20, 2018 marked the official start of the campaign toward the historic revision of the International System of Units (SI), which will be agreed upon at the 26th Meeting of the General Conference on Weight and Measures (CGPM) in Versailles, France on November 13-16, 2018.

As the Philippines' National Measurement Infrastructure System or NMIS, NML-ITDI organized and hosted a weeklong celebration to promote awareness on the impact of measurements in

business and trade, science discovery and innovations, and in sustaining the quality of life and global environment.

To kick-off, Dr. Annabelle V. Briones, Officer-In-Charge of ITDI and Deputy Director for Research and Development, welcomed guests. After which, NML Chief Aurora V. Kimura, delivered the keynote message of DOST Undersecretary Brenda L. Nazareth-Manzano.

The celebration featured as main event Seminar on Metrology Course: Fundamentals of Measurement on May 21-25, 2018. This is a refresher course for the regional metrology laboratories featuring latest updates on the redefinition of the SI base units. The activity consisted of a series of lectures on the fundamentals of the different measurement quantities in the fields of Physical Metrology, Metrology in Chemistry, and Metrology in Biology with practical approaches on measurement of uncertainty.

Resource speakers from NML discussed topics on metrology in general; beginner's guide to uncertainty of measurement mass, force, pressure, volume, density, electrical, temperature, humidity, time, and frequency; and metrology in chemistry and biology.

DOST-ITDI Seafood... *from p. 1*



Photo Credit: RRUdelaCruz

- Chilled marinated white-spotted spinefoot fish (*lamayo* or *danggit*)
- Spray dried fermented fish paste (*bagoong balayan*)
- Vacuum-fried Venus clam (*barinday*)
- Sea grapes powder or spray-dried *lato*
- Freeze-dried gracillaria

II. Support to Food Industry Competitiveness

- Chemical and Biological Metrology Application for Food Safety

- OneLab
- Thermal process validation services
- Modular Innovation Center
- FIC facility
- Formula of Conversion (FOC) for Duty Drawback/Tax Credit Purposes
- Energy audit
- Resource Efficient and Cleaner Production (RECP)

ITDI tech adopters also at IFEX

Also at IFEX 2018 were two adopters of ITDI technologies that are producing commercially.



One was **Sally's** owned by Ms. Sally Lee Dalawampu who chanced upon ITDI's vacuum-fried carrots and *okra* in a *negosyo* fair last year where ITDI participated and instantly fell in love with them. After some meetings/ discussions to acquire the technology, Sally's already carried her own brand of vacuum-fried carrots and *okra* at IFEX 2018.



Another was **Radical Kitchen** whose beginning was rolled by ITDI mango rolls or mango leather. From the simple mango roll, Radical Kitchen, living up to its name, concocted several variants of fruit rolls and has diversified into other healthy products. With its innovativeness and tenacity, Radical Kitchen persisted and has recently celebrated its 15th anniversary and in her message to the company, Dr. Annabelle Briones, OIC, Office of the Director of ITDI said, "*As we often say to our stakeholders, let not your dreams remain just dreams, let us help you make them happen. Let us make science and technology work for you, and together, we can get there!*" (ITDI S&T Media Service)

Photo Credit: RRUdelaCruz



DOST-ITDI San Miguel... *from p. 2*

The accord links two of the country's known outfits, DOST-ITDI for multidisciplinary research and technology transfer to industries, and SMYAC, a subsidiary of San Miguel Yamamura Packaging Corporation. SMYAC provides a wide range of glass packaging solutions to food, pharmaceutical, chemical, beverages, and personal care industries.

The match stands to benefit SMYAC as a major player in the glass packaging industry especially with a December 2017 Mordor Intelligence report citing that the global glass packaging market is expected to grow from USD 49.61 billion in 2016 to USD 61.24 billion by the end of 2021 with growth being driven by the Asia-Pacific region. (AMGuevarra)

PH, DOST-ITDI... *from p. 5*



NML-ITDI as the Philippines' National Measurement Infrastructure System hosted the weeklong celebration of the 2018 World Metrology Day held on May 21-25, 2018.

Photo credits: DDGotis/MISalazar

Exhibit booths that featured Yana Chemodities and Mettler Toledo laboratory supplies and equipment were installed for guests viewing. Meanwhile, Yana Chemodities and Mettler Toledo displayed in an exhibit for public viewing their new laboratory equipment and devices.

Other guests from DOST-ITDI were Dr. Janet F. Quizon, Chief of Finance and Administrative Division; Dr. Blessie A. Basilia, Chief of Materials Science Division; Dr. Zorayda V. Ang, Officer-In-Charge of Planning and Management Information Systems Division; Dr. Emelda A. Ongo, Officer-in-Charge of Chemicals and Energy Division; and Ms. Daisy E. Tañafranca, Chief of Packaging Technology Division. (DDGotis)

A China... *from p. 8*

On April 26, Civil Service Commissioner and Scientific Career Council Chair Hon. Alicia Dela Rosa-Bala, through SCC Executive Secretary and National Academy of Science and Technology Director Luningning E. Samarita-Domingo, announced conferment of the Scientist 1 rank to a delighted Dr. Torres.

"Seemingly, like a dream," she stressed, "My conferment was dated to have taken effect last February 27, 2017."

One of five new Scientist I at the science agency, two others, also from ITDI, are Officer-in-Charge of the Office of the Director Dr. Annabelle V. Briones and Advanced Materials Section Head-Materials Science Division Dr. Marissa A. Paglicawan.

Two from the Philippine Nuclear Research Institute (DOST-PNRI), namely, Fernando B. Aurigue and Glenda B. Obra complete the list.



Meanwhile, the Scientific Career System (SCS), established on March 17, 1982 by the late President Ferdinand E. Marcos, is a recognition program under the CSC and DOST for full-time researchers in the government, the University of the Philippines System, and state colleges and universities.

"We are called career scientists through SCS's unique recruitment process for qualified researchers so that we may progress in our careers, and be recognized and rewarded for exemplary public service," Dr. Torres explained.

With a body of 33 scientific research papers listed in 7 international and 6 national journals, Dr. Torres has successfully captured the tiger as early as 1993. Then, one of her researches was published in the Flavour and Fragrance Journal, a bimonthly peer-reviewed scientific journal published since 1985 by John Wiley & Sons. The Flavour and Fragrance Journal is indexed in *Journal Citation Reports (JCR)* of Thomson Reuters.

According to the Institute for Scientific Information JCR, being listed here means that the work of Dr. Torres enjoys a 2016 Journal Impact Factor (JIF) of 1.644. JIF is the average number of citations received per paper published in that journal during the preceding two years. In 2016, JCR ranked the Flavour and Fragrance Journal as belonging to the upper 44% (32/72) of journals in Chemistry Applied and upper 46% (61/130) in journals on Food Science and Technology.

Indeed, the doll has tamed the feral jungle cat and claimed it as her own.

Aside from her awards given by other bodies, if publication in reputed journals is one of the criteria used to evaluate the excellence of her life's works, then Dr. Torres far surpasses the metric to evaluate the merits of one.

"When I told my husband of my conferment, he told me, I am truly admirable. My heart swelled with pride and contentment. I did not just receive an award; I have conquered my fears and weaknesses. I feel strong. I stand strong," she ended. (AMGuevarra)

A China Doll in a Tiger's Den

不入虎穴焉得虎子 or Bù rù hǔ xué yān dé hǔ zǐ is a Chinese proverb about striving toward success. Its direct English translation is "Not enter tiger den, how get tiger cub?"

There is a China doll at ITDI who ventured into a tiger's den for she believes that great rewards require great risks. Thus, fortune favored her bravery.

With her light, clear skin and almond eyes, she looks a lot like a China doll. Beautiful and pleasing to the eyes, soft spoken and charming, these fair traits belie grit, strength, and resilience.

Transforming the China Doll



Born on October 22, 1956 in Hamtic or Karay-a in Antique, ITDI's China doll is the fourth of eight children of Capt. Jose Martinez Cabañero, a ship captain, and Petra Yap Gonzaga, a housewife. Baptized as Rosalinda Cabañero, Linda, as family and friends call her, took on bluntly her dream.

By disproving her name sense, this doll-like beauty proved to be a law unto herself when she promptly chose to travel more than 600 kilometers in 1973 to the University of Sto. Tomas in Manila. There she took as her undergraduate course Biochemistry.

Historical records trace the study of the first enzyme, diastase (today called amylase), in 1833 by Anselme Payen while others considered Eduard Buchner's first demonstration of a complex alcoholic fermentation in cell-free extracts in 1897 to be the birth of biochemistry.

It does not matter though because 76 years later after Buchner's demonstration, "I was 15 years-old and ecstatic to be given the chance to dabble in the wonders of chemistry," the young Linda said.

Some 36 years hence of consecutive and thorough studying as a part time DOST Scholar will hone her, allowing her to draw on the techniques of analytical, organic, and physical chemistry, as well as, those of physiologists concerned with the molecular basis of vital processes in living matter.

Thirty-nine years, a doting husband, three beautiful daughters (a second child named Camille Rose died just before her ninth birthday), and one very good-looking son after a college degree, the beautiful Linda Cabañero, now Dr. Rosalinda Cabañero-Torres, scored a double wham last 2017.

However, that is hitching the horse before the carriage.

Great Minds Take Long Walks

In 2009, she finally got her Doctor of Philosophy degree, again in chemistry. A wife and mother first, it took her 13 years of part time studying as a DOST scholar to get this. At times, she was not hopeful that she would get it and often thought of not pursuing it anymore, if not for her friends' encouragement. Earlier, she completed her masteral program in Chemistry for seven years, again because her priority was, and still is, being wife and mother.

Thus, grit and persistence were her two constant companions in her career and family life. Add to these a resilient spirit, which allowed her to bounce back each time as she tried to carve a niche for her passion – chemistry.

In 2017, with a fiercely roaring difference, the China doll has not only ventured into the tiger's den – she entered dead center into its lair, took the tiger's face between her hands and softly stroked it!

On February 13, the Industrial Technology Development Institute (DOST-ITDI) appointed her as the new Chief Science Research Specialist of the Standards and Testing Division (STD).

A technical service division, STD conducts chemical, physical, and biological tests and analyses of food and feeds; fine chemicals, solvents, and solutions; fats and oils; plastics, rubber, leather, and other polymers; and fuels and petroleum products, among others. STD further conducts studies on test methods, product quality/ performance, and other similar studies for various industry sectors.



Our Business Is Industry



INDUSTRIAL TECHNOLOGY DEVELOPMENT INSTITUTE
Department of Science and Technology
DOST Compound, Gen. Santos Ave., Bicutan,
Taguig City, Metro Manila, Philippines 1631
Tel.: (+632) 837.2071 to 82 Fax: (+632) 837.6156
URL: <http://www.itdi.dost.gov.ph>

The official Newsletter of the
Industrial Technology Development Institute, DOST
(Published semi-annually)

Dr. ANNABELLE V. BRIONES
Publication Director

NELIA ELISA C. FLORENDO
Executive Editor

VIOLETA B. CONOZA
Editor-in-Chief

ADELIA M. GUEVARRA
Associate Editor

ITDI WRITERS POOL
Contributing Writers

DELIA D. GOTIS
Editorial Assistant

ELNILA C. ZALAMEDA / LUZMIN R. ESTEBAN
Design/Layout

LUZVIMINDA P. HERRERA / MARY ANN F. GALLON
Circulation