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Science, Astronomy

Spanning the millennium head on Department ofScience and TechnologyRegion IV-A Vol. XVI No. 2 February 2008 DOST-ITDI, ICETT implement GFIS Joined hands with DOST CALABARZON in “ greening” environments The IndustrialTechnologyDevelopment Institute, a line agency of DOST, in cooperation with the International Center for Environmental Technology Transfer (ICETT), based in Yokkaichi City, Prefecture of Mie, Japan, and select DOST Regional Offices are firing up local initiatives to boost productivity yet still preserve localenvironment.

ICETT, with the support and cooperation of its own national and local governments, industry, and academe, utilizes Japan's collected industrial technologies and administrative measures on environmental conservation. It applies these to implement programs and projects on the same together with participating countries. The aim is to enhance “ greening” of regional environments and prevent their destruction overseas, thus achieving conservation globally.

Together with ICETT, the Philippines as participating country is thus implementing “ Green Framework of Innovative Strategy on Sustainable Consumption and Productivity” or GFIS, a five-year project of DOST-ITDI through its program on Cleaner Production. GFIS aims to: 1. Establish model industrial-eco barangays, towns and communities; 2. Improve environmental performance of both local industries and its community through environmental awareness, Cleaner Production (CP), Energy Efficiency (EE), and Environmental Management System (EMS); and 3.

Recommend provisions for inclusion in policy recommendations to local government units and national government agencies. GREENHOUSE EFFECT GFIS aims to enhance “ greening” of regional environments thus contributing to global diminution of the Greenhouse Effect. The greenhouse effect refers to the way in which gases in the Earth’s atmosphere warm the Earth like the glass roof of a greenhouse—by letting sunlight in but keeping the reflected heat energy trapped inside.

These naturally occurring gases, notably carbon dioxide and water vapor, are called greenhouse gases. DOST CALABARZON Bulletin February 2008 DOST-ITDI claims that one of the components of GFIS under the CP program is technological capacity building of staffs. It added CP is a forward looking “ anticipate and preventphilosophy. ” Thus, firms preventpollutionbefore they occur resulting in reduced wastes generated at source. This indirectly reduces operating costs and increases safety of workers.

The results are an improved corporate image as perceived by the public and global competitiveness. GFIS is being pilot tested at DOST NCR, DOST CALABARZON and DOST Region V. DOST CALABARZON through Guilberto A. Veluz, Center Manager for Technical Operations, recently initiated conduct of a three-day training and workshop for Cleaner Production Assessors of the region at Batis Aramin Resort and Hotel in Lucban, Quezon. The Regional Office intended to build CP and EE technical capabilities of 18 CP assessors from five state universities in CALABARZON.

These include Provincial S Center of Quezon, Cavite State University, Laguna State Polytechnic University, Batangas State University, University of Rizal

System, and the Southern Luzon State University. During the training, the assessors evaluated production of Center Miki Factory and Valde’s Poultry Farm in Lucban, and Capistrano Distillery and Kamayan sa Palaisdaan in Tayabas. The assessors completed drafting of the FiRST Reports (Findings, Recommendations, Schedules and Tasks) and gave copies to management representatives of participating firms. They will submit the complete CP report one month after the training. (AMG) NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE DOST-PTRI puts to good use young coconut husks Develops textile dye While most of us enjoy the hot summers drinking “ Buko” juice (juice form young coconut) and nibbling on its fresh meat as an effort to while away time, the Philippine Textile Research Institute (DOSTPTRI) found good use for the young coconut husks which we usually throw away.

DOST-PTRI turned difficult to remove stains from these husks into a textile dye called coconut pink. They found out that young coconut husk extract imparts red to maroon color on silk, pina-seda and pina while it produces an old rose color on cotton. They also established colorfastness, laundering and light ratings of the dyed materials and found these to be satisfactory for all these types. Coconut husks’ potential to impart red color comes as a necessary indulgence for textile manufacturers who use in great quantities the non-colorfast red dye from sibukao (Caesalpinnia sappan).

The textile institute’s research study revealed that young coconut husks sourced from different locations produce varying shades of red. This required thus hue and color tint matching capabilities and adjustments in the dyeing parameters. In addition, DOST-PTRI found that coconuts from high elevations yield almost no color compared with coconuts from coastals and low- lying areas. This new use for young coconut husks holds promise for additional income for farmers. Likewise, the new technique’s requirement for compulsory chopping of husks before extraction facilitates rapid decomposition.

This reduces the risk of clogging of waterways and drainage systems along coconut processing villages. Incidentally, this emerging natural dye industry runs complimentary to the National Coconut Agenda as it does not compete with thefoodandhealthuses of coconut. DOST-PTRI pilot tested the young coconut husk extraction and textile application technology using materials from the Bahaghari and kaLIKHAsan Collection of Kingsmen Corporation and Mariana Fashion Apparels, respectively. The technique forms part of the package of technologies adopted and commercialized by Soumak Collection to produce one of their original color options.

Their dyed creations are sold in select shops in California, New York City, parts of Asia, and soon in Europe. Soumak Collection also tried the new dyeing technology on cotton bed linens for their Bed and Beddings collection. µ (PTRIAMG) DOST CALABARZON Bulletin NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE

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February 2008 Space Technology Committee pushes for acquiring SATELLITE for RP In a resolution signed during the recent Second National Congress on Space Technology Applications and Research (NCSTAR), some 25 government and private agencies declared that the Philippines badly needs its own earth-observing satellite which can provide real-time data crucial in disaster monitoring and weather forecasting. “ An earthobservationsystem will be beneficial to the country,” says Dr.

Reynaldo Ebora, Executive Director of the Department of Science and Technology’s Philippine Council for Advanced Science and Technology Research and Development (DOST-PCASTRD), convenor of the congress. “ The Philippines is perennially affected by natural disasters, making timely, synoptic space-based information a necessity. ” Participants to the Second National Congress gave solid support for a proposal to explore possibilities of acquiring the country’s own earth-observing satellite.

Once acquired, the satellite will provide weather forecast months in advance. It can predict where diseases like malaria and SARS are most likely to arise. While most may look at the acquisition as a way to avoid bother in their daily activities, regular incidence of typhoons and their resulting diseases show the importance of the satellite in saving lives and properties. According to DOST’s space technology expert Dr.

Jose Edgardo Aban, having our own earth-observing satellite can assist the country in monitoring our land surface, biosphere, atmosphere, and surrounding oceans. The satellite can track environmental changes in areas it is assigned. Processes that the earth undergoes, be it biological, ecological, climatological, or geological, can be monitored and better understood. These will enable us, especially our leaders and experts, to make more informed decisions that may affect lives, the environment, and the economy.

Aside from these, it can monitor forest fires, predict the effect of air quality on people, provide farmers with immediate forecast to help maximize agricultural yields, and calculate the pattern of typhoons and storms. Likewise, participants proposed the inclusion of satellite development and other related space technology applications in the school curriculum and strengthening the coordinative functions of the current Science and Technology Coordinating Council – Committee on Space Technology Applications. µ DOST scholar grad finds 900 BLACK HOLES in the sky

A Department of Science and Technology-ScienceEducationInstitute (DOST-SEI) scholar-graduate is now making waves in the international astronomical world after leading a team that discovered the largest number of super massive black holes in the centers of galaxies in the universe. Reinabelle Reyes, a PhD student at Princeton University and a BS Physics summa cum laude graduate at the Ateneo de Manila University in 2005, led a team of Sloan Digital Sky Survey (SDSS) scientists that discovered a large number of " hidden quasars" that are shrouded in light-absorbing dust and gas.

According to Reyes, her team found around 900 hidden quasars, which is by far the largest sample ever found. " We found that hidden quasars make up at least half of the quasars in the nearby universe, implying that most of the powerful black holes in our neighborhood had previously been unrecognized," she said. She added their discovery shows that powerful black holes are more common in the last eight billion years of cosmic history than had previously been thought and that the relative numbers of hidden compared to normal quasars show how the appearance of dust and gas determine the presence of a hidden quasar. The large number of hidden quasars we discovered implies that most of the light emitted by quasars is actually obscured. Moreover, because the light from these hidden quasars previously had been unaccounted for, black holes turn out to be more efficient in converting the energy of in-falling matter into light than we had thought," she said. The research team presented its discovery last January 9 at the annual meeting of the American Astronomical Society in Austin, Texas, and has submitted a paper describing the research for publication in the Astronomical Journal.

Reyes said their project is the culmination of the graduate thesis work of her co-author, Nadia Zakamska, a long-term postdoctoral fellow at the Institute of Advanced Study, under the supervision of Princeton professor Michael Strauss. Dr. Ester B. Ogena, Director of the DOST-SEI, said Reyes' success in hercareeris a glaring example of the quality of scholar-graduates the country produces and the vast potential the Philippines has in space science. We hope that our students would be able to get inspiration from Reyes and pursue a career in the sciences that will 2 hopefully add to the roster of our

great astronomers and space scientists," she said. µ (PCASTRD AMG) DOST CALABARZON Bulletin 2008 NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEFebruary NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE NEWS ELSEWHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE WHERE EWS LSEWHERE EWS LSEWHERE EWS LSEWHERE Formation of a Black Hole In the red giant phase towards the end of a star’s life, a star with up to 1. solar masses becomes unstable and ejects its exterior layers into space (1), creating a planetary nebula, before contracting again to form a white dwarf, which cools, eventually becoming a black dwarf, too cold to shine. If the red giant is more massive, it generates heavy elements like iron and grows (2) to form a supergiant. Then it explodes and its matter is released into space. If the entire supergiant explodes (3), this is a supernova. Depending on its mass, the supernova gives birth either to a neutron star or, for even higher-mass stars, a black hole. If only the outer part of the supergiant explodes (4), a nova forms.

The DOST-SEI has laid the groundwork for a Philippine Space Education Program in the country following a designation by the United Nations Educational, Scientific and Cultural OrganizationParis to act as focal point for its space-education program and related activities in the Philippines. It aims to promote science and technology, particularly space science, to Filipino students. The PSEP also seeks to engage the Filipinos in the exploration of space science and technology and the process of science in various disciplines in an effort to create an educated public and o generate future space science explorers. Likewise, the PSEP aims to create awareness

among the students in career opportunities in the various fields of science and engineering including space science that would raise standards and address skill shortages towards national development. It also aspires to establish linkages and partnership with space organizations and institutions for possible assistance and collaboration in space science education programs and projects. µ (DOST-SEI) DOST CALABARZON Jamboree Road, Timugan Los Banos, Laguna 4030 STAMP 2