

## A Meeting of National Innovation System Development Committee



The National Research Council of Thailand (NRCT) attended the 2<sup>nd</sup> meeting of National Innovation System Development Committee held on 8<sup>th</sup> April 2016 at Thai Khu Fah Building, Government House in which General Prayuth Chan-ocha, Prime Minister, acted as the president. Miss Sukanya Theerakullert, Deputy Secretary - General, Acting Secretary - General, NRCT as an National Innovation Systems and Development Committee attended the meeting and presented an agenda respecting Thai invention account.

## An Application of Para-rubber Latex and Soil Cement for Developing Pool against Drought

Being aware of drought issue which is a major problem of Thailand nowadays, Thailand Research Organizations Network (TRON) including the National Research Council of Thailand (NRCT) and the Thailand Research Fund (TRF) has supported a research project entitled **An Application of Para-rubber Latex and Soil Cement for Developing Pools against Drought** aiming to develop soil cement mixed with pre-vulcanized latex to pave the pool floor in order to prevent water leakage. The engineering features of soil cement merged with pre-vulcanized latex have been examined by using the mixture ratio of cement: laterite: water (2 : 5 : 1) and the amount of pre-vulcanized latex (7.5 % of water mixed with laterite) will yield the best engineering quality.

The research work on the mixture of soil cement with pre-vulcanized latex has been utilized in practice, namely constructing pool against drought in the rice field of farmer community, for example, a soil cement merged with latex pool and a concrete mixed with latex pool in support of the operation and maintenance of the Yom river project in Prae province.



### Application of research work

Researchers have applied research results on soil cement merged with para-rubber latex to practicable use by building anti-drought pools from soil cement mixed with latex and concrete mixed with latex. The building processes are:

1. Surveying/observing the areas in which a pool will be built (with local agriculturists)
2. Digging an anti-drought pool
3. Adjusting the area before building the pool
4. Building the pool by using concrete mixed with latex and soil cement mixed with latex
5. Measuring water leaks in both types of the pool by filling up of the pool with water at the required depth, and measuring the rate of water leak of each pool



A comparison of the expenses for building the two pools with 10 meters long, 5 meters wide and 2.5 meters deep (trapezoid) was made and showed that the cost of a concrete pool is higher than a soil cement pool at 38% because the concrete pool is reinforced iron and wall, making its floor thicker than the soil cement pool while the soil cement pool is in contrast coated with soil cement along the wall and floor, for the soil cement cannot be casted like concrete.

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## The National Research Council of Thailand (NRCT) Led Thai Researchers and Inventors to Malaysia and Switzerland to Participate in Invention Exhibitions

Ms. Sukanya Theerakullert, Secretary – General of NRCT led Thai researchers and inventors to join in international invention exhibition and contest in Malaysia and Switzerland. Details of exhibitions and NRCT's derided prizes are as follows.



1. "The International Engineering Invention Exhibition 2016" (I-ENVEX 2016) was held from 8 - 10 April 2016 at Perlis State, Malaysia with the support of Universiti Malaysia Perlis (UniMAP) and ENVEX Young Researcher Club (EYReC) UniMAP, MINDS Chapter.



In the event, over 550 research works and inventions from 20 countries were entered the competition. As to NRCT, three research works and inventors from Rajamangala University of Technology Srivijaya were as well taken part in the contest, and won one gold medal, two silver medals, and seven special prizes from three countries which were divided into two types of prizes: special prize on stage (one prize) from Malaysian Research & Innovation Society (MyRIS) and six special prizes from several countries, namely Malaysia (three prizes), Taiwan (two prizes), and Indonesia (one prize).

2. " 44<sup>th</sup> International Exhibition of Inventions of Geneva " was organized during 13–17 April 2016 at Geneva, Swiss Confederation with the support of the Swiss Federal Government of the State, the City of Geneva and the World Intellectual Property Organization. NRCT in collaboration with 18 agencies e.g. Chulalongkorn University, Thammasat University, King Mongkut's Institute of Technology Ladkrabang, Chiang Mai University, Prince of Songkla University, Naresuan University, Sakon Nakhon Rajabhat University, Rajamangla University of Technology Suvanabhumi, Electricity Generating Authority of Thailand, National Science and Technology Development Agency (NSTDA) presented 50 research works and inventions in the exhibition in which more than 700 research works from 40 countries were sent out to compete for medal.

Thai research works and inventions won **seven gold medals of honor, eight gold medals, 17 silver medal, 18 bronze medals, and 28 special prizes** from other countries which were categorized into **special prizes on stage** (three prizes) from the Ministry of Science and Technology of Russia (one prize), Korea Invention Promotion Association (KIPA) (one prize), Taiwan Invention Association (one prize) and **25 special prizes** from Malaysia (four prizes), Taiwan (two prizes), Korea (four prizes), Hong Kong (two prizes), Russia (two prizes), Iran (three prizes), Poland (three prizes), China (three prizes), and United Arab Emirates (three prizes).



3. " 27<sup>th</sup> International Invention & Innovation Exhibition " (ITEX 2016) was held during 12 – 14 May, 2016 in Malaysia. More than 1,000 research works and inventions from 21 countries were exhibited and in a competition. In this contest 35 qualified works of Thai researchers and inventors from 16 organizations were encouraged to enter the competition such as Chulalongkorn University, Thammasat University, Prince of Songkla University, Khon Kaen University, Silpakorn University, King Mongkut's University of Technology North Bangkok, Chiangrai Rajabhat University, Chulalongkorn University Demonstration School, the Office of Vocational Education Commission, The Thailand Research Fund (TRF), TOT Innovation Institute, Electricity Generating Authority of Thailand, and Rajamangla University of Technology Thunyaburi in conjunction with Ariyasutthi Intertrade Co.,Ltd.

Thai researchers' and inventors' works won **21 gold medals, 11 silver medals, three bronze medals** and **27 special prizes** from several countries, namely Taiwan (ten prizes), Poland (two prizes), Indonesia (three prizes), Russia (two prizes), Korea (two prizes) Saudi Arabia (four prizes), and **four special prizes on Stage** from the Association of European inventors (AEI), Association of Polish Inventors and Retionalizers (API&R), Association "Russian House for International Scientific and Technological Cooperation" (Association "RH ISTC") and Japan Intellectual Property Association (JIPA).



## Exploration of the Ranong Fault's Submarine Extensions for Seismic Hazard Analysis

The National Research Council of Thailand (NRCT) provided funding on foreign cooperation (Thai – Federal Republic of Germany) for Asst. Prof. Dr. Passakorn Pananont, Kasetsart University to undertake a research project “Exploration of the Ranong Fault’s Submarine Extensions for Seismic Hazard Analysis”



### Problem to be researched

After the Tsunami in the year 2004, several earthquakes occurred in the Gulf of Thailand and the Andaman sea, particularly in the areas at same level with Khlong Ma Rui and Ranong Faults. It is possible that the extensions of the faults on the ground become longer and possibly stretches to the sea. It is difficult to examine and analyze the hazard of seism.

### Remedy for Problem by Research

Marine seismic reflection survey and sub-bottom profiler were applied to survey the geophysics in the immediate vicinity of the upper Gulf of Thailand to offshore area of Prachuap Khiri Khan Province. The survey was approximately 350 kilometers in length. The obtained data is used to make a map indicating the level of seismic hazard in order to reduce the loss of people life and their assets in case of earthquakes in the future.

### Summary of Research

The geophysics exploration in the sea of Thai Gulf showed fault evidence that implied the earthquake in the sea about 30 kilometers from coast connected to Ranong faults. It was found that the accelerating rate of the ground in southern part and lower central region (in 475 years of earthquake likelihood) was 1-29%g (moderate damage). An earthquake impact model of 5.0-6.0 at 10 kilometers deep in the lower central region and the upper part of the south was studied and pointed out that the earthquake caused 0-9.6%g accelerating rate of the ground which affected not much severity.

## Research Presentation

Asst. Prof. Dr.Passakorn Pananont organized this seminar on March 18, 2016 at Novotel Hua Hin Cha Am Beach Resort & Spa, Prachuap Khiri Khan Province chaired by Miss Pannee Panyawattanaporn, Director of Division of International Affairs for the purpose of diffusing study results respecting the earthquake and Tsunami to government and private agencies in order that they will plan to take action to deal with the earthquake in the future.



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## Haze Free Thailand Project



Smog pollution is a critical problem. It affects people in the area: the old, children, in particular. Since 2007 the National Research Council of Thailand (NRCT) has been supporting research projects to tackle this problem, e.g. air pollution research and its impact to the communities in northern Thailand, emission of carbon dioxide from burnt forest, burning straw in Chiang Mai - Lampoon basin, monitoring and evaluation of air pollution from burned forest in northern Thailand, etc. Nonetheless since research projects in recent years have been conducted in part, and lacked of integration, as a result, research findings cannot be dealt with the overall problems. The NRCT and Thailand Research Organizations Network (TRON) have then supported megaprojects, for instance, Grand Challenges Thailand, Research University Network (RUN), etc. to generate integration of cooperation between governmental sector, private sector and people in the area so as to build up the strength of the community.

The Haze Free Thailand, a project under Grand Challenges Thailand, is gotten support from the NRCT and TRON which hereby designate Chiang Mai University to be core operations to run the project for reducing smog pollution in Thailand sustainably in future time.



## The National Research Council of Thailand (NRCT) and The Secretariat of the House of Representatives signed MOU for Joint Cooperation in ASEAN

Miss Sukunya Theerakullert, Acting Secretary-General of the NRCT and Mrs. Saithip Chaowalittawil, Secretary-General of the House of Representatives signed MOU on Academic Cooperation and Laws Research concerned with ASEAN on March 29, 2016 at the Secretariat of the House of Representatives with the aim of cooperating with and supporting Thai government in integrating research information supplementary to the Cabinet's consideration as regards the national administration in order to enable Thailand to be legislative center in ASEAN.

