



PROF. Herminigildo Ranera (extreme left) conducts the UST Symphony Band as they lead the community singing of the Philippine National Anthem.



MEMBERS of the Thomasian community observe a moment of patriotism while they sing in unison the country's national anthem.



UST rector Rev. Fr. Tamerlane Lana, O.P. delivers his address following the raising of the Philippine Flag.

faculty update

Eng'g prof earns doctorate degree from TIT

After five years of shuttling between the Tokyo Institute of Technology (TIT) in Japan and the UST Research Center for the Natural Sciences (RCNS) in Manila, as prescribed in her fellowship grant, Engr. Maria Natalia Dimaano of the Faculty of Engineering, graduated with a Doctor of Engineering degree from the Japanese institution last March 2003.

Dimaano's dissertation paper was Thermal Performance Characterization of Capric Acid and

Lauric Acid Mixture for Low Temperature Energy Storage. As a recipient of the Japan Society for the Promotion of Science (JSPS) RONPAKU (Ph.D. Dissertation) Fellow from 1998-2003, Dr. Dimaano had to spend three months every year for five years at the TIT-Department of Nuclear Engineering (DNE).

It was at the DNE where she conducted experiments and discussed intensively her research with her adviser, Dr. Takayuki Watanabe. The remaining nine months, however, were spent at the UST-RCNS

where she did data analysis and writing. During this period, Dr. Watanabe, in turn, had to visit her for 14 days to a month each year to supervise the progress of her dissertation work as planned. Dr Watanabe stayed at the RCNS during these annual visits.

Dr. Dimaano followed a heavy work schedule for the duration of her study grant, and a similarly heavy defense schedule. She had a preliminary defense open only to her five-member defense panel on June 24 and 25, 2002; an oral public defense on August 6, 2002; and the closed-door final exam in the presence of her panel members held on February 6, 2003.

The UST professor was able to get the grant from the Japanese government in 1998 through the Department of Science and Technology (DOST), where she was one of the three Filipinos awarded with the JSPS RONPAKU Fellow. Prior to receiving this, she was a Philippine Exchange Scientist through the DOST-JSPS Joint Scientific Cooperation Program, TIT in Japan during the fiscal years 1995-1996 and 1996-1997.

In between her experiments, data analysis and writing, Dimaano, together with her mentor Dr. Watanabe, presented papers and posters in international conferences and published articles in scientific journals both foreign and local. The most recent of these paper presentations was on December 2002 during the Chemical Engineering Congress at De La Salle University where Dr. Dimaano presented a paper on "Transient Behavior of the C-L Acid for Thermal Energy Storage". The Dimaano-Watanabe tandem had also presented papers in Australia, Singapore, Thailand, Japan, and the Philippines.

The latest publication endeavor of Drs. Dimaano and Watanabe is for the Journal of Chemical Engineering of Japan where they wrote a paper on Natural Convection during Melting and Solidification of Capric and Lauric Acid Mixture in a Vertical Tube.

Dr. Dimaano's study is about cooling a space unit. She described her research work as "a cooling process that makes use of a coconut-derived material which is capable of changing its phase from solid to liquid (and vice versa) during melting." It is a recyclable material that when melted, can lower the temperature of an adjacent space unit to a comfortable degree. It can eliminate the use of Freon because it serves as an alternative cooling unit for air conditioning system, thus, reducing electricity cost and lessening the use of fuel.

Dimaano disclosed that the DOST-PCIERD has already evaluated her study and is looking at the possibility of using it for commercial

purposes. However, with the procedure that was used in her research, she personally finds it quite expensive and its high cost will affect its commercial viability. She is now considering the possibility of modifying the characteristics for cooling application so as to result in a cheaper and more affordable material.

"If I will have to modify the design to make the outcome of the study cheaper, I will need to collaborate with faculty members from the Mechanical, Electrical and Civil Engineering Departments because my study has something to do with heat reduction and energy," she said.

"This is a pioneering study in the Philippines," she enthused. "It makes use of capric acid and lauric acid. Coconut oil is a good source because it contains 50% lauric acid and 6% capric acid, and coconut is abundant, too, in the Philippines. Goat oil also contains capric acid," she further explained.

"In the Chemical Engineering Department, on the other hand, my research could be used for courses in the ChE basics and in energy management. ChE basic courses include heat transfer, thermodynamics, and materials science. Energy management, meanwhile, covers fuel and thermal energy storage," she said, noting the curricular contribution of her study to her own department.

For school year 2003-2004, Dr. Dimaano plans to apply the use of capric acid and lauric acid by working on a design for the implementation of the study. She intends to work on a pilot or a lab scale to see the possibility of its industrial use. This June, she will go back to teaching and maintain her research load at the RCNS. She is a faculty staff of the Chemical Engineering Department.

Dr. Dimaano holds a Master's Degree in Chemical Engineering from the University of the Philippines. She graduated from the Faculty of Engineering in 1980 with a degree in BS Chemical Engineering and has been teaching in this institution since 1988. Prior to her teaching in the University, she was a chemist and assistant unit manager at the Baguio Gold Holdings Corporation and the Benguet Corporation. She also taught at the UST Graduate School.



DR. Dimaano