

LETTER FROM THE GUEST EDITORS

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Synchrotron techniques and applications are fairly new to Thai scientists although they have come to an existence for several decades worldwide. The Thais have learned the materials tremendously for the last fifteen years from fellow scientists in Japan, Taiwan, South Korea, Germany, France, UK, USA etc. From our observation, it is true to say that synchrotron-based X-ray approaches are the most preferable techniques covering soft, tender and hard X-ray regions. Generally, the techniques disclose elemental compositions, molecular and atomic structures of the materials in quest. The techniques are far better than those based on conventional light sources due to the brilliance and the very small size of the photon beam. Studies of a very tiny spot on a sample are therefore possible.

Readers who are not familiar with the synchrotron applications can find introductory information concerning a synchrotron facility in Nakhon Ratchasima, Thailand, from an article authored by S. Sujitjorn. Contact details of our scientists can be found for any further discussions of possible collaborations and our services given.

Kuntanawat *et al.* (2015) used a "lab-on-a-chip" facility at deep X-ray lithography beamline to fabricate their devices. They discuss about reusability of biochip for single cell trapping and culturing. Five articles appearing in this special issue have used synchrotron-based X-ray. Two essays present the use of wide-angle X-ray scattering (WAXS) technique: the work authored by Wongpreedee and Amornsakchai (2015) investigates the reinforcement of natural rubber using pineapple leaf fiber; another one authored by Chantira *et al.* (2015) proposes an investigation of cement hydration. The paper authored by Rungswang, *et al.* (2015) provides a brief review of small-angle X-ray scattering (SAXS) technique applied to industrial cases of structural analysis of semi-crystalline polymer. Corrosion behaviour of chromium nitride film on steels has also been studied by using X-ray based absorption spectroscopy and photoemission electron microscopy, respectively. This essay is authored by Wongpanya *et al.* (2015) A nice work on crystallographic analysis of *Leishmania siamensis* (Ls) is presented by Kuaprasert *et al.* (2015) Their works utilised hard X-ray available from a super-conducting wavelength shifter, a new insertion device recently installed at SLRI.

Our special issue serves to provide an insight into usefulness of synchrotron-based techniques lending themselves to academic and industrial researches. Synchrotron-based science is a matured

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field in many countries, and an emerging field in Thailand. We as a service organisation encourage scientists to come to use our facility to gain deep inside the materials in quest of any advanced innovative products. SLRI will serve as one major infrastructure of the country to advance our science and technology.

Sarawut Sujitjorn serving as a lead guest editor is the Director of Synchrotron Light Research Institute (SLRI), Thailand. He is a professor of electrical engineering and has had more than 20 years of experience in teaching and research. He received his BSc and PhD in electrical engineering from the Royal Thai Air Force Academy, and the University of Birmingham, UK, respectively. He has authored more than 200 research and technical articles, 17 patents, 2 books and 2 monographs.

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References

- Wongpanya, P., Wongpinij, T., Photongkam, P., Keawhan, C., Tunmee, S., and Witit-Anun, N. (2015). The corrosion behavior of chromium nitride film on AISI 4140 and H13 steels. *Suranaree J. Sci. Technol.*, 22(3):231-242.
- Kuntanawat, P., Ruenin, J., Phatthanakun, R., Boonkhot, P., Suanoi, P., and Pumas, C. (2015). Disposable vs reusable: practical aspects from end users and reusability test of the biochip for electrostatic microwell-based single cell trapping and culturing. *Suranaree J. Sci. Technol.*, 22(3):243-252.
- Wongpreedee T. and Amornsakchai, T. (2015). Synchrotron X-ray diffraction study of pineapple leaf fiber reinforced natural rubber composites during stretching. *Suranaree J. Sci. Technol.*, 22(3):253-263.
- Rungswang, W., Jarumaneeroj, C., and Chivatanasontorn, V. (2015). Application of small-angle X-ray scattering (SAXS) via synchrotron radiation for structural analysis of semi-crystalline polymer: study cases from polypropylene for industrial usage. *Suranaree J. Sci. Technol.*, 22(3):265-276.
- Chantra, T., Sisomphon, K., Rugmai, S., and Sinthupinyo, S. (2015). The early age study of cement hydration by in-situ synchrotron X-rays diffraction. *Suranaree J. Sci. Technol.*, 22(3):277-283.
- Kuaprasert, B., Attarataya, J., Riangrunroj, P., Pornthanakasem, W., Suginta, W., Mungthin, M., Leelayoova, S., Choowongkomon, K., and Leartsakulpanich, U. (2015). Preliminary crystallographic analysis of leishmania siamensis triosephosphate isomerase complexed with its novel inhibitor. *Suranaree J. Sci. Technol.*, 22(3):285-293.