

## Establishment and Development of Thailand Synchrotron Light Source

*Wednesday 17 September 2014 14:40 (20 minutes)*

Establishing and operating a synchrotron light source in a developing country such as Thailand poses a set of unique challenges. The facility, which was established in the year 1998, began with the relocation of an old synchrotron machine used for lithography from Japan. While the booster synchrotron was kept intact, the storage ring was redesigned to be more suitable for synchrotron radiation researches, namely, reducing electron beam emittance and beam size to generate higher brightness synchrotron light, as well as doubling the size of the ring to accommodate more photon beamlines. The photon beamlines were gradually constructed and commissioned. From merely one photon beamline back in 2003, now the light source has 8 beamlines in operation, with 2 more under commissioning, and another 2 under construction. With improved beam diagnostics, the positional stability of the electron beam was greatly improved in 2012. Last year two high-field insertion devices were installed to extend the available radiation spectrum to higher energy X-ray region (up to 20 keV). Since the time of facility construction, there are a number of rather unique difficulties that have to be overcome. First and foremost is the fact that the country did not possess sufficient level of expertises related to advanced technology. These include ultra-high vacuum technology, cryogenics, precision machining, and high-precision control system, among others. The facility needed to develop these aforementioned capabilities by itself from the ground up. Time was needed to develop both requisite infrastructures and human expertises. A small number of domestic researchers familiar with synchrotron radiation techniques posed another obstacle. This problem was alleviated by organizing outreach and training programs. Finally, limited funding was and continues to be a challenge. Experiences gained in setting up Thailand Synchrotron may prove to be valuable to other countries under similar circumstances.

**Presenter:** KLYSUBUN, Prapong

**Session Classification:** Case Studies