

New centre to look at approaches to imaging proteins

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A new Centre of Excellence in Coherent X-Ray Science will be developed with an AUD\$9 million ARC grant over five years, involving Australian and overseas universities and other organisations. Prof Keith Nugent, Federation Fellow in Physics at the University of Melbourne, will be the centre's director, and its deputy director will be Prof Leann Tilley of La Trobe University's department of biochemistry.

"The ARC Centre of Excellence in Coherent X-ray Science will bring physicists, chemists and biologists together to develop fundamentally new approaches to probing biological structures and processes," said Tilley in a statement. "It will combine world-class expertise in imaging, structural biology, laser science and molecular theory. The project will develop novel high-resolution imaging and probing using the Australian synchrotron, and ultimately X-ray lasers."

La Trobe's departments of physics and biochemistry will participate in the program, which is scheduled to start later this year. Dr Andrew Peele, a Queen Elizabeth II Research Fellow in the department of physics at La Trobe explained that X-ray sources were becoming ever brighter, and X-ray lasers would be available in the next 10 years. "These sources will open up whole new areas of investigation such as the structural determination of proteins not amenable to conventional methods," Peele said.

Australian scientists involved in the centre are currently reviewing techniques using synchrotrons overseas and are developing technology in order to create new techniques for when the Australian Synchrotron opens for business in 2007. The overarching scientific aim of the centre is to solve the structures of membrane proteins. "We hope to be able study a number of model proteins and identify any that could be used as drug targets," said Tilley. She said researchers at the centre would use coherent diffraction imaging to find new ways for deconvoluting the individual spectra of molecules.

Overseas scientists will also be able to use the new synchrotron. In June an agreement was reached with Japan's Spring-8, the world's largest synchrotron, to work together, exchange ideas and develop new experimental technology.

Tilley also stressed the importance of the Australian Synchrotron for developing the skills of local young scientists. "We plan to do outreach activities. We are not just interested in selling science to scientists, we hope to encourage school-aged students too keep studying physics."

Collaborating or contributing organisations in the project include the universities of Melbourne, Swinburne and Monash, CSIRO divisions of Health Sciences and Nutrition and Manufacturing and Infrastructure Technology, the Australian Synchrotron Research Program, the Walter and Eliza Hall Institute of Medical Research, Riken, National University of Singapore, Lawrence Livermore National Laboratory, Advanced Photon Source, Chicago, and the Victorian Department of Innovation, Industry and Regional Development.