



## HXMA BEAMLINE

HXMA allows researchers to get a full understanding of the composition and structures of heavy metals in a variety of environmental, geological, biological and exotic materials samples.



## HXMA: a valuable tool for industrial research

When you talk to CLS staff scientists Ning Chen and Chang-Yong Kim the first thing that becomes apparent is the pride they have in the Hard X-ray Microanalysis beamline (HXMA).

“HXMA is a really versatile beamline,” remarks Kim. “At the moment it is the only place at the CLS where people can look at a sample requiring really high energy X-rays.”

The Phase I beamline is one of the synchrotron’s industrial research workhorses, using the facility’s most powerful X-ray beam – one researcher described HXMA as an “X-ray blowtorch” – to study the composition and structures of heavy metals in a variety of environmental, geological, biological and exotic materials samples.

“Most synchrotron research involves one technique, one beamline,” explains Chen. “HXMA has three endstations, which is really rare. It gives us the opportunity to develop a full understanding of the sample being investigated, using multiple techniques in a single project.”

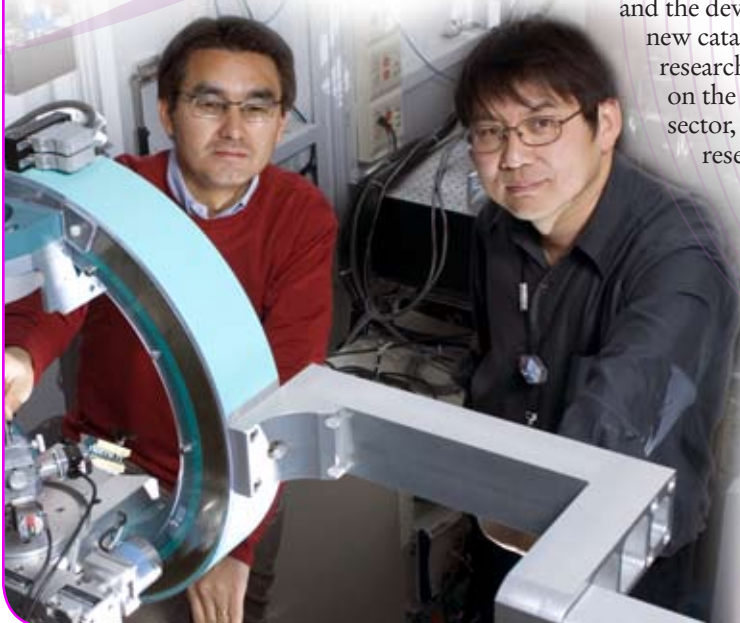
HXMA has already received rave reviews from veteran users with the beamline’s results comparing favourably with single technique beamlines at other synchrotrons. Research highlights have included examining the structural changes of metal hydrides at extreme temperature and pressure – important knowledge for the design of materials to safely store the gas for hydrogen-powered cars – as well as work related to environmental soil chemistry and the development of new catalysts. Industrial research has focused on the environmental sector, with additional research into the

chemistry of arsenic and other chemicals in mine tailings and heavy metals in air filter particulates.

“We do our best to support the industry program,” says Chen. “We have strong industrial links, not only through the CLS industrial group but also personally.”

In fact, both Chen and Kim have strong industrial science roots. Chen’s first exposure to synchrotron science was as a post-doc researcher, working with the CLS Business Development group on characterizing the arsenic minerals in uranium mine tailings for Areva (Editor’s note: please refer to the interview with Areva Vice-President John Rowson in InnoVision’s first issue). Kim first worked with synchrotron X-rays as a graduate student before working on synchrotron beamlines with Lucent Technologies and IBM.

“Industry is already getting to know the value of XAFS and we know that they will be getting more involved as they learn about HXMA’s other capabilities such as microprobe, says Kim. “It’s really the only way to get valuable information from some samples.”



Chang-Yong Kim and Ning Chen, CLS Staff Scientists