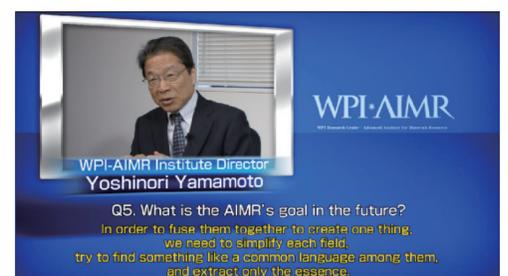


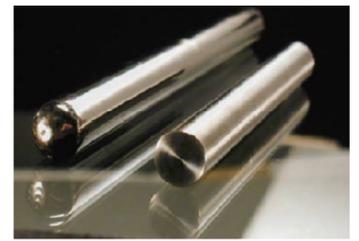
## Enriching Society through Advanced Materials Science

The Advanced Institute for Materials Research (WPI-AIMR) is one of six research Centers established by the World Premier International Research Center Initiative (WPI). WPI-AIMR is leading materials science at Tohoku University, which was ranked 3rd in the world (1st in Japan) for citations in the field between 2000-2010 (Thomson Reuters).

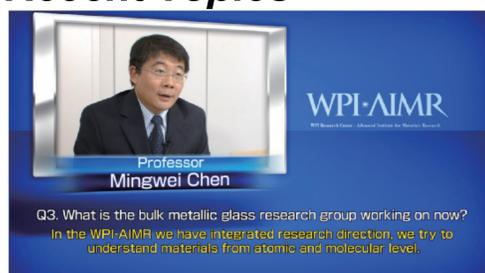
The **goal** of WPI-AIMR is to revolutionize materials science by furthering understanding on how atoms and molecules control common materials. "The key to the achievement of this goal is interdisciplinary research," emphasizes Director Prof. Y. Yamamoto. To this end, AIMR gathers researchers involved in everything from basic science to applications for a variety of materials, such as bulk metallic glasses (BMG), ceramics, polymers, and biomaterials.



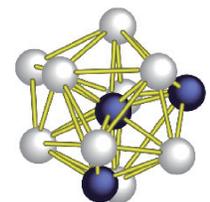
WPI-AIMR welcomes ambitious researchers. A big push has been started to encourage collaboration between **mathematics** and materials science at WPI-AIMR. The mathematician Prof. M. Kotani, Deputy Director of WPI-AIMR, says, "We mathematicians are excited to help revolutionize materials science. This is indeed a very unique project."



### Recent Topics



Prof. M.W. Chen, Principal Investigator (PI), is studying **BMG** at the atomic level. Recently, his group discovered short-range order in BMG (Nature Materials 10, 28-33, 2011). This work represents a milestone toward the elucidation of glass formation mechanisms and functional manifestations in BMG.



Bulk metallic glass (BMG) samples and short-range order atom cluster in BMG.

By using an ultrahigh-resolution angle-resolved photoemission spectrometer (ARPES), Prof. T. Takahashi (PI) and his co-workers found an iron-based high-temperature **superconductor** with an electronic structure known as a "Dirac cone" that is similar to graphene (Physical Review Letters 104, 137001, 2010; Physics Today, April 25, 2011). In addition, his team recently succeeded in developing a spin-resolved ARPES spectrometer with the world's highest resolution, sure to be vital to the future of spintronics.



Spin- and angle-resolved photoemission spectrometer (ARPES) with the world's highest resolution.

### Environment

Sendai is a beautiful city. Known as the "City of Trees," and only 100 minutes away from Tokyo, its nature, culture and history provide a great environment for research.



"I have been appointed as a Junior PI of WPI-AIMR, concurrent with my position at Texas A&M. WPI-AIMR is a completely new type of research center in Japan, where foreign researchers can fully concentrate on research owing to excellent support by bilingual administrative staff. In addition, **Sendai** is a great city, where urban life and the beauty of nature blend to form an exceptional experience." says Prof. W. Teizer.

