World Premier International Research Center（WPI）

WPI Advanced Institute for Materials Research（WPI-AIMR）

WPI Laboratory Building

Following the concept of International Advanced Materials Research Center Plan which was adopted in the framework of International Research Center Initiative（WPI Program）hosted by the MEXT, Tohoku University established the Advanced Institute for Materials Research（WPI-AIMR）in October 2007.

WPI-AIMR has gathered top-grade researchers, in the fields of physics, chemistry, materials science, bioengineering, precision mechanical engineering and electronic/informational engineering, in order to conduct interdisciplinary research which implements new innovative methods of atomic and molecular control that go beyond existing concept. Through the new method, the Center is committed to pursuing the creation of new materials and compounds and developing devices based upon them; From FY2011, in concurrence with these research activities, interdisciplinary fusion research will be accelerated with mathematics as a catalyst so as to elucidate common principles. The Center creates new fundamental paradigms and also promotes the application of research projects with the new materials and system architecture which generates direct societal impacts especially for green innovation; thus exhibiting the qualities necessary to become a world-leading international center of materials science.

Bulk Metallic Glasses

This division is dedicated to the cutting-edge research of advanced non-equilibrium metallic materials including amorphous, quasicrystalline and nanostructured metals and alloys that exhibit unique and superior physical, chemical and mechanical properties.

Materials Physics

Exploring and understanding innovative materials for electronic devices are the key targets in the research of division.

Soft Materials

Synthesis, characterization and evaluation of soft materials, such as organo-π-electronic devices, gel, polymer composites, microporous polymer films, and nano-structured materials catalysts, are key issues of this division.

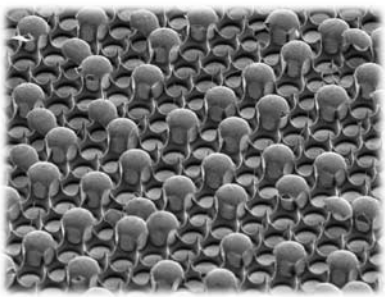
Device / System

Our device/system group consists mainly of spintronics, electronics, MEMS materials and bio device laboratories. Fabrication of innovative materials and developing them to devices are key target of our group.

Mathematics Unit

Mathematical Unit gives a viewpoint beyond various levels of hierarchy of the outcomes of materials science and builds a new scientific principle in cooperation with Groups of Bulk metallic glasses, Materials physics, Softmaterials and Device/Construction.

The electron micrograph shows a metallic glass nanowire that involves ultrahigh strength and high elasticity. The sine wave pattern demonstrates the vibration of the nanowire.



High adhesive superhydrophobic metal–polymer hybrid surfaces prepared by self-organization