

Young researchers fostered by the Element Strategy Initiative

Researchers from different fields of specialization and overseas students mixed together and studied. The research centers of the Element Strategy Initiative provide an ideal opportunity for the fostering of human resources. We listened to the views of researchers in charge of research at the centers, people who have graduated from the initiative and conduct research in Japan, and those who are spreading their places of activity to the global platform.

My research



Park Myeong-heom

Elements Strategy Initiative for Structural Materials (ESISM)

In order to enhance the strength and ductility of steels and other structural materials, we are attempting to elucidate the deformation nature of such materials and to determine what happens to their microstructures during deformation and how that relates to strength and ductility.



Keitaro Sodeyama

Elements Strategy Initiative for Catalysts and Batteries (ESICB)
Currently at the National Institute for Materials Science.

First-principles simulations are used to investigate the mechanisms of material properties in order to discover new electrolyte materials for batteries. I propose promising new materials using data-driven science after searching a large number of candidates.



Masatoshi Hiraishi

Tokodai Institute for Element Strategy (TIES)
Currently at the High Energy Accelerator Research Organization

I investigate dilute hydrogen added as an impurity in such materials as semiconductors and solar cells using muons, one of the elementary particles, infer what occurs from the hydrogen behavior, and construct models for analysis.

This is the interesting part!

Synchrotron radiation x-ray diffraction uses x-rays with high brightness and directivity for measurements. Each measurement takes a short amount of time, enabling us to obtain detailed information on crystal structures. During the annealing process of sintered neodymium magnets, it is fascinating to track the moment-by-moment changes in the structure and quantity of crystals.



Wakana Ueno

Elements Strategy Initiative Center for Magnetic Materials (ESICMM)
Japan Synchrotron Radiation Research Institute (JASRI) / Spring-8



Lo Yu-Chieh

Elements Strategy Initiative for Structural Materials (ESISM)
Currently at the National Chiao Tung University

My focus is on investigating and developing leading structural materials and functional materials based on computational materials science. Knowing that I could provide new insight into existing assumptions is what makes my research fascinating.

While theoretical and computational chemistry is my area of expertise, most of my colleagues specialize in machine learning. I am conducting research with experimental researchers toward common objectives. Each researcher has their own strengths and expertise, and those moments that our talents mesh and complement each other are an indescribable joy.



Masaki Okoshi

Elements Strategy Initiative for Catalysts and Batteries (ESICB)
Currently at Panasonic Corporation

Message from a forerunner

Research and dreams I want to pursue



Takao Shimizu

Tokodai Institute for Element Strategy (TIES)
Currently at the National Institute for Materials Science

Recent studies on ferro-electrics have produced crystal structures different from conventional perovskite structures, expanding the range of candidate substances. I hope to create ferroelectrics with well-known crystal structures.

Since I was a student, my dream has been to create the world's strongest magnet. Utilizing TDK's strengths in materials technology and production and analytical techniques, I hope to realize that dream.



Liu Lihua

Elements Strategy Initiative Center for Magnetic Materials (ESICMM)
Currently at TDK Corporation



Shun Kondo

Elements Strategy Initiative for Structural Materials (ESISM)
Currently at Chalmers University of Technology (Sweden)
Overseas Research Fellow,
Japan Society for the Promotion of Science (JSPS)

The mechanical properties of a material are largely influenced by their internal microstructures and textures, as well as their constituent elements. I would like to clarify these mechanisms to lay the foundation for developing new structural materials.

Carry on believing that you can change the world with your own powers. Masato Sagawa

Now is a splendid chance to be the one and only researcher in the world. Akira Yoshino

In order to retain your convictions you need to thoroughly equip yourself with basic strengths. Hiroshi Amano

Dig, and you will find water. And if you don't find water you're not digging deep enough. Hideo Hosono

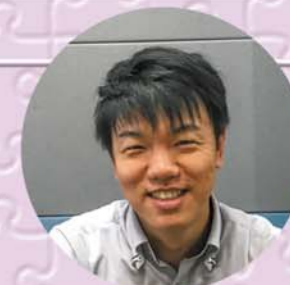
As the next leaders in materials research



Kim Junghwan

Tokodai Institute for Element Strategy (TIES)

Diverse researchers employ their individual methods and ways of thinking to achieve a single important objective. This is the power of the Element Strategy Initiative. Among these efforts, we expect to gain a concrete picture of research for "turning matter into usable materials."



Hiroshi Yoshida

Elements Strategy Initiative for Catalysts and Batteries (ESICB)
Currently at Kumamoto University

We should strive to gain a better understanding of the physico-chemical features in different environments such as adjacent atoms, co-present gas compositions, and thermal conditions. Strategies for controlling or enhancing features of elements may prove effective in future materials research.



Yusukke Hirayama

Elements Strategy Initiative Center for Magnetic Materials (ESICMM)
Currently at the National Institute of Advanced Industrial Science and Technology (AIST)

In recent materials research, machine learning has made it possible to predict, without experimentation, the properties of materials to a degree. I hope to contribute to the creation of new materials by developing processes for synthesizing materials that have been thus far difficult to produce.