



# HUNTING HISTORY WITH METEORITES

The world's biggest microscope, weighing in at approximately 10 tons and measuring seven meters in length, is located in the research facilities of Hokkaido University. Developed over a 20-year period by Professor Hisayoshi Yurimoto of the university's graduate school, it is an isotope microscope built for

peering into "space."

Isotopes are different forms of the same element that have in their nuclei the same number of protons but different numbers of neutrons—they thus have the same atomic number, but differ in relative atomic mass. For example, there is not just



microscope. The isotope microscope is thus a very powerful tool, and the one developed by Professor Yurimoto is the only one in existence in the world.

Professor Yurimoto is carrying out research aimed at clarifying the origins and evolution of the solar system by looking at meteorites. "A meteorite is a fragment of an asteroid that has fallen to Earth from space," he explains. "There is information locked up in a meteorite from the time when solid bodies formed within the solar system. We can unlock this information by using the isotope microscope to analyze the distribution of isotopes within the meteorite. This will allow us to reveal the history of the solar system from the time of its birth, which will give us clues to the solar system's origin." That a tiny piece of meteorite no more than a centimeter across can reveal the history of space in all its majesty is nothing short of mind-boggling.

**LEFT:**

A view of the isotope microscope

**BELOW:**

A fragment of meteorite for examination is set under the isotope microscope

Applications are currently being accepted from private-sector companies wishing to use the isotope microscope for research. Companies whose research is approved will be able to use the facility free of charge.

one type of hydrogen or oxygen; they each have different isotopes which have identical chemical properties but which nonetheless differ in their atomic structures. An isotope microscope is able to detect these difference to an extremely high level of precision. Moreover, an important feature of the isotope microscope is that it does not just display data in numerical form, but also gives a visual image of isotopes in much the same way as an optical

