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WELCOME

There has been a buzz among the scientific world about the recent mission to send the Japanese Hayabusa2 spacecraft to the Ryugu asteroid. Hayabusa2 arrived at Ryugu in 2018 and spent over a year orbiting the asteroid before a sample retrieval project was attempted. In February 2019, samples were successfully collected from the surface of the asteroid and the craft returned to earth in December 2020.

The C-type asteroid Ryugu, which exists in the asteroid belt closest to Earth, is thought to still contain water and organic matter from the formation of the solar system some 4.6 billion years ago. Where did the Earth's water come from and where was the organic matter that makes up life formed? And how did the first micro-planets that are thought to have formed repeatedly collide, destroy, and merge with each other to create planets? The Hayabusa2 mission aims to understand these questions.

Before the craft landed, Rigaku was selected in a highly competitive arena as the company of choice to carefully measure the precious samples using elemental analysis via XRF and thermal analysis measurements. Rigaku is delighted to provide data that will serve as a benchmark for various analyses to be conducted by research groups around the world in the future. These results will be presented at several conferences in 2022. Read more about this story here.

UPCOMING RIGAKU WEBINARS

Thermal Analysis Technical Seminar: Application of Polymers
April 14, 2022 1 AM | CDT

The seminar will focus on thermal analysis methods such as STA, DSC, TMA, STA-MS and HUM-STA on the thermal behavior of polymers featuring a wide range of options that provide solutions to your needs.
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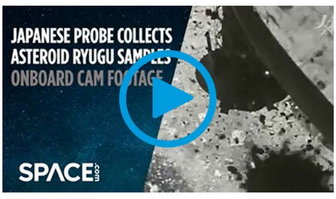
VIDEO OF THE MONTH



Japanese Probe Collects Asteroid Ryugu Samples

Watch via Hayabusa2's onboard camera as the spacecraft touches down on the surface of the Ryugu asteroid.

FEATURED APPLICATION NOTES

XRD

Analysis of a Stony-Iron Meteorite Using a HyPix-3000 Detector
Rigaku Corporation

A stony-iron meteorite is like a single crystal. When using 0- or 1-dimensional detectors, only a few diffraction peaks are observed. In this situation, identification of crystalline phases cannot be conducted. Therefore, a stony-iron meteorite was analyzed using the multi-dimensional detector, HyPix-3000, which has an effective detection area for the identification of crystalline phases.

A stony-iron meteorite was analyzed using the HyPix-3000. Inside a stony-iron meteorite, there are transparent parts similar to glass and opaque parts similar to metal. The transparent parts were thought to be non-crystalline (amorphous). However, when measurement of the transparent part was actually performed, only one diffraction line was observed. In general, when measurement is done with a 0D or a 1D detector, the range in which diffraction X-rays can be detected from the sample is limited to a certain region.
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WDXRF

Beryllium Analysis in Beryllium Copper Alloy
Rigaku Corporation

Beryllium copper alloy is almost as strong as steel and is the strongest among copper alloys. In addition, it has non-magnetic and non-sparking characteristics, high electrical conductivity and ductility. Owing to these features, beryllium copper has many uses, such as: springs, electric connectors, tools in environments with explosive vapors and gases, and musical instrument components. Since the characteristics and uses of beryllium copper alloys depend on the beryllium concentration, it is important to analyze beryllium in beryllium copper.

Beryllium is the lightest element that can be analyzed by XRF spectrometry. Its element line, Be-Kα, has a very long wavelength, 11.4 nm (or very low energy, 0.109 keV) and very shallow critical depth. Therefore, X-ray intensities of Be-Kα are significantly affected by the surface condition of specimens. For beryllium analysis by XRF spectrometry, surface treatment is essential.

Owing to the long wavelength of Be-Kα, beryllium analysis requires high-power wavelength-dispersive X-ray fluorescence (WDXRF) spectrometers equipped with an analyzing crystal with high reflectivity for Be-Kα. This application note demonstrates beryllium analysis in beryllium copper alloy.
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EDXRF

Analysis of Metals in Aerosols on Air Filters
Applied Rigaku Technologies

Element analysis of aerosols and particulate matter released in smokestacks and other industrial gas discharge is vital to ensure that environmentally acceptable levels of toxic and hazardous elements are released properly into the air. Monitoring smoke or other gaseous waste is important in many areas, such as industrial manufacturing, coal-fired power plants, chemical and plastics production, etc., in order to minimize air pollution and the release of toxic metals in compliance with US EPA and other world and regional or local governing regulations. As a tool to help ensure compliance and proper release, Rigaku offers the NEX DE EDXRF analyzer with 60 kV excitation source and high-resolution and throughput silicon drift detector, giving analysts and technicians a fast, simple, yet powerful means for monitoring elemental analysis of air filters.
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MATERIALS ANALYSIS IN THE NEWS

Rigaku Europe SE will host Pharma Forum 2022 on April 27-28 as an online event. During the forum, we will discuss the application of scientific methods in research, development, and the production of pharmaceutical products. Register here for the Rigaku Pharma Forum and discuss your research results with senior scientists, industry experts and laboratory professionals. Share your experiences and provide feedback to Rigaku so we can develop better tools and analytical techniques. There is no charge for registration and participation in this event.

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