Space – the Final Frontier!

BYK-Gardner's spectro-guide to orbit the earth

NASA has launched two BYK-Gardner spectro-guide spectrophotometers to the International Space Station (ISS) aboard Orbital Vehicle 103 (Shuttle Discovery).

One critical aspect of spacecraft crew health assurance is maintaining a safe, useable supply of drinking water. To ensure that water provided by the spacecraft distribution and recycling systems is potable, bacterial inhibitors are added. Therefore, the spectro-guides are used as an integral part of an experimental water quality monitoring system developed by a team of scientists and engineers from NASA's Habitability and Environmental Factors Division in the Space Life Sciences Directorate at Johnson Space Center, the Wyle Integrated Science and Engineering Group in Houston, Texas, the University of Utah, and Iowa State University. The system is called the Colorimetric Water Quality Monitoring Kit (CWQMK), and it uses color measurements to help ensure that only the appropriate biocide levels are present in the water on ISS. Before, all samples used to monitor spacecraft water quality were collected in-flight and stored until returned to earth for chemical analysis. Not ideal because of sample degradation during storage and the time lapse between sampling and correction steps in real time – if needed.

As part of pre-deployment procedures, the spectro-guide had to pass a Procedure Validation (PV) session with NASA's astronaut corps. The PV session allows an astronaut to run through the onorbit procedures to make sure that there won't be any confusion during crew training or during deployment on the ISS. Due to the simplicity and ease of operation of the spectro-guide, there were no issues during the PV session. Subsequently, operational procedures were approved and seven astronauts were trained on the hardware.

The spectro-guides that are used on the ISS are virtually the same as those used by thousands of color measurement professionals on earth. They feature advanced patented technology that make them the most accurate, reliable, and dependable color spectrophotometers available:

- Temperature independent readings – the same results at 15 °C or 38 °C are guaranteed
- Long-term stable LED illumination – no bulbs to burn out
- Calibration suggested only every 3 months – not every hour
- No warm up period needed
- Highly accurate, repeatable readings through robotic calibration during manufacturing
- Virtually never needs service due to advanced design

spectro-guide and the Discovery – a strong team to go where no color spectrophotometer has gone before!