



Hyperspec™ SWIR Sensor Reveals Secrets of 3,000 Year Old Pottery Artifact

Headwall spectral imaging assists archaeologists in deciphering earliest known Hebrew text from 10th century BC ostrakon

Fitchburg, MA; December 15, 2008 – Headwall Photonics, a leader in the field of spectral instrumentation, announced that Hyperspec™ SWIR spectral imaging instrumentation was used by archeologists from the Israel Antiquities Authority to analyze five lines of text found on an ancient shard of pottery uncovered in a 3,000 year old city. The inscribed pottery shard, known as an ostrakon, was scanned and imaged utilizing Headwall’s high spectral resolution Hyperspec™ SWIR sensor which provides spectral imaging capabilities in the range of 1000 to 2500 nanometers.

In collaboration with archaeologists from the Israel Antiquities Authority, and Foundation Stone, a non-profit organization developing the Elah Fortress dig site for the public, Headwall application engineers conducted multiple hyperspectral scans of the ostrakon which resulted in the identification of new text symbols that is currently assisting the project team in efforts to decipher the text appearing on the pottery shard. Hyperspectral images, which yield information about the chemical composition of an object or scene, allow researchers to analyze information which may not be visible to the naked eye.

Carbon dating of the ostrakon reveals the artifact is approximately 1,000 years older than the famous Dead Sea Scrolls. Mr. Saar Ganor, an archaeologist with the Israel Antiquities Authority, stated “With such an important historical artifact, it is critical to deploy non-destructive analytical techniques such as Headwall’s hyperspectral imaging. The ability to provide both high spectral and spatial resolution were significant attributes in our decision to work with Headwall’s hyperspectral sensors.”

Hyperspectral imaging is a rapidly growing technology area within the field of spectroscopy. “As a leader in the design and manufacture of spectral analysis instrumentation, Headwall has been deploying hyperspectral imaging for remote sensing and military applications for over fifteen years,” stated David Bannon, Chief Executive Officer of Headwall Photonics. “By adopting this proven technique, researchers can better understand not only the text of the ostrakon but also the characteristics of the artifact such as inks, pigments, and material composition. It is indeed a very exciting project for the Headwall applications team to work on.”

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About Headwall Photonics

Headwall Photonics is a leading designer and manufacturer of imaging spectrometers and spectral instrumentation for industrial, commercial, and government markets. Headwall's high performance spectrometers, spectral engines, and holographic diffraction gratings have been selected by OEM and end-user customers around the world for use in critical application environments. As a pioneer in the development of innovative spectrographs and imaging spectrometers based on optical technologies, Headwall enjoys a market leadership position through the design and manufacture of patented spectral instrumentation that is customized for application-specific performance. Headwall Photonics was formed in 2003 as the result of a management buy-out from Agilent Technologies.

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About Israel Antiquities Authority

As the leading and largest archaeological organization, the Israel Antiquities Authority is in charge of the country's antiquities and antiquity sites, their excavation, preservation, conservation, study and publication thereof, as well as the country's antiquity treasures. The Antiquities Authority has set for itself the goal of increasing the general public awareness about archaeology.

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About Foundation Stone

As a non-profit organization, Foundation Stone is redrawing the map in Jewish Education. With innovative programs such as the Tel Yavne Prototype Excavation (TYPE), De'Ara Seminars and Educational Materials, and Media Resource Kits, Foundation Stone is anchoring traditional texts to the artifacts, maps, and locations that form the context for Jewish identity. The organization supports development work at many archeological sites such as Tel Yavne, the Elah Fortress, Usha, Yavne Yam, and Shilo.

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