



Oseberg sleds, Viking Ship Museum, Oslo.

Keeping Viking history alive

Susan Braovac is a conservator at the University of Oslo, working on the Alum Research Project to preserve artifacts from the Oseberg Find, one of Norway's most celebrated Viking ship discoveries.

Uncovered in 1903 by a local farmer whilst digging in a large Viking Age burial mound on his property near Tønsberg, Norway, the burial mound turned out to be ship grave. Today, the restored ship and many of the related artifacts are housed in the Viking Ship Museum, Oslo.

A comprehensive solution

Susan explains her role in preserving this piece of Scandinavian history. "We are looking at the degradation of wood that was preserved almost 100 years ago using alum treatment, which is essentially impregnating wet wood with a concentrated salt solution so it doesn't collapse when dried. Unfortunately, that technique causes the wood to degrade over time and it is now extremely fragile."

A colleague at the University had been using a free data analysis package, which Susan decided to trial for her own research. She explains, "I evaluated the free ware for my needs, mainly to compare FTIR data, but it wasn't built for that."

"We work with FTIR, NMR and sometimes NIR, identifying and also comparing methods and results too." Susan continues, "FTIR is very easy to use while NMR is more expensive, so we try to use expensive methods to aid our interpretation of cheaper methods"

Ideal for spectral data

"While the free software did allow you to do PCA (Principal Component Analysis), it wasn't flexible or intuitive and you couldn't import spectral data."

"I found out about the Unscrambler because I kept reading journal articles and seeing the Unscrambler mentioned. As part of my project, I had a research stay at a laboratory in Vienna which is a world leader in the analysis of wood, and they were also using the Unscrambler."

"The Unscrambler is ideal if you are analyzing lots of spectra. This is vital for us because the spectra get so complicated when degradation of wood occurs. Now, using the Unscrambler, we are able to look at spectral changes due to deterioration. We can also compare results from different types of analyses"

The easy importing and excellent graphical interface are two of the features of the Unscrambler that are most useful for Susan in her job. "You can import all sorts of spectral data, and the system is so flexible I was able to easily compare different types of spectral data because the software's layout is very good visually."

Industry:

- ▶ Higher Education / Research

Product:

- ▶ The Unscrambler® X

Executive Summary:

- ▶ Researching wood degradation of Viking Age artifacts from the Oseberg find that were originally treated with concentrated salt solution
- ▶ Use FTIR, NMR and occasionally NIR to identify and compare methods and results from spectral data, including Principal Component Analysis (PCA)
- ▶ Considers the importing features, ease of use and graphical interface of the Unscrambler the best aspects of the software
- ▶ Received helpful advice and support from the CAMO Software experts regarding her results and data analysis

At a glance:

- ▶ Museum of Cultural History
University of Oslo
- ▶ Established 1811
- ▶ 1.6 million artifacts
- ▶ Includes archaeological, ethnographic, ecclesiastical art (church art), numismatic and runic archives

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Free TestDrive 

“The Unscrambler is ideal
if you are comparing alot of complex spectra”

Susan Braovac

Archaeological Conservator, Dept. of Conservation
Museum of Cultural History, University of Oslo

Ideal for people new to multivariate analysis

As someone without formal training in multivariate data analysis, Susan found the ease of use and intuitive workflows within the Unscrambler helped her get the most from the software. “I was relatively new to multivariate analysis techniques, so it was useful to be constantly reminded about scores, validation, loadings etc, which are in the menus and dialogue boxes that appear when you are going to perform an analysis. The Unscrambler has nice examples that you can relate to.”

“I also wanted to see if the results and interpretations were accurate and correct, so we spoke to one of the experts at CAMO who was able to help us and confirm we were on the right track,” she adds.

Susan feels that as the technologies improve, the use of spectroscopy and application of multivariate analysis will increase. “Everything is becoming more cross-disciplinary. Like conservators, archeologists are also using spectroscopic methods more often in their work, for example, classifying ceramics based on the analysis of food remains found in pots. So I can definitely see the potential for multivariate analysis in fields outside of the hard sciences” says Susan.

Combining state of the art technology with modern scientific methods, Susan and her team are helping preserve an important chapter in Norwegian history.



The Oseberg ship, Viking Ship Museum, Oslo.

UiO : Kulturhistorisk museum



For more information on Museum of Cultural History, University of Oslo
visit <http://www.khm.uio.no/>



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