**λs Lambda Solutions, Inc.**

## Jade and Pearl Analysis and Classification

Dimension-M1™ provides the ability to analyze and characterize jewelry samples such as jades and pearls. According to the Raman spectra of these samples, the jades and pearls were tentatively classified into different groups or classes by their distinctive Raman peaks. Note that all spectra in this presentation are raw spectra without efficiency correction.
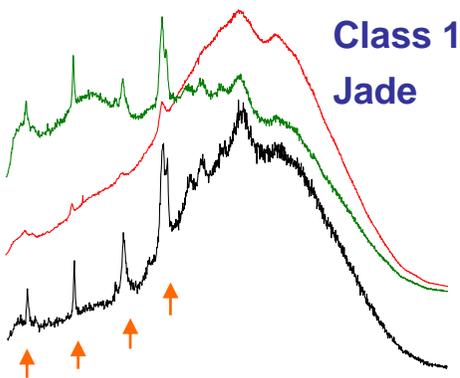
Class 1 Jade

Class 1 Jade: There are four characteristic Raman peaks around 355, 685, 1030, and 1305 cm^{-1}.


Burmese Jade

Horse Necklace
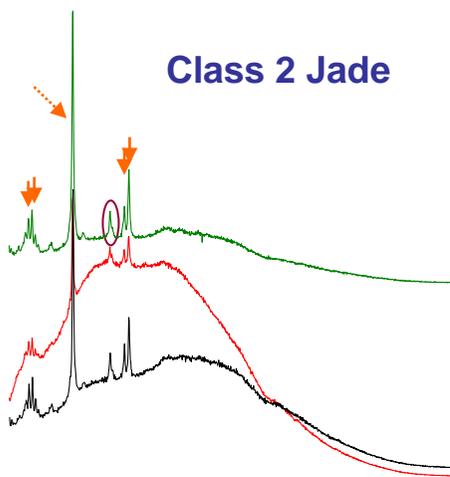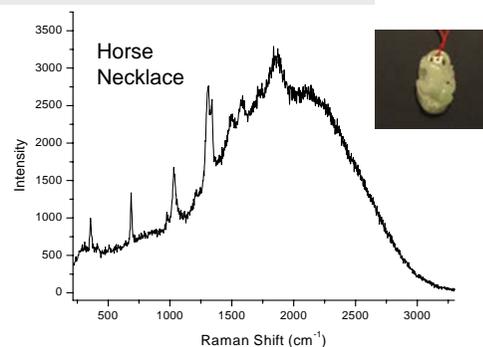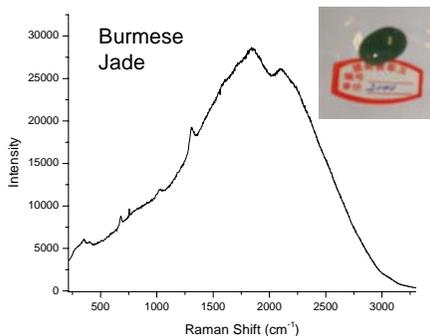
Class 2 Jade

Class 2 Jade: Compared to Class 1 Jade, class 2 jades lacks the last peak (at 1305 cm-1) of Class 1 jades. In addition, some have split peaks around 355 and 1030 cm^{-1}. The peak around 685 cm^{-1} is shifted to 650 cm^{-1}, and there is an additional peak around 920 cm^{-1}.

Mouse Necklace

Bracelet

**Class 1 Jade**
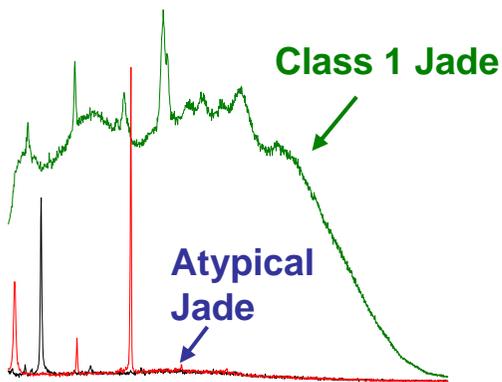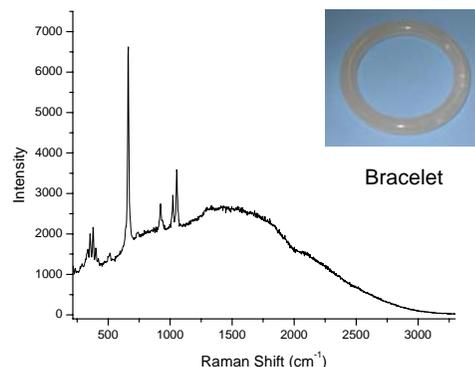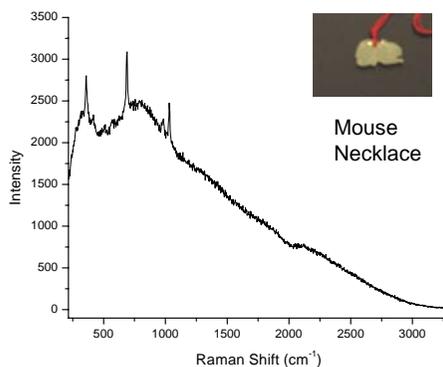
Atypical Jade

Atypical Jade: Atypical jades exhibit none of the Class 1 Jade peaks. Instead, their Raman peaks resemble those from minerals such as calcium carbonate, or possibly glass-like plastics.
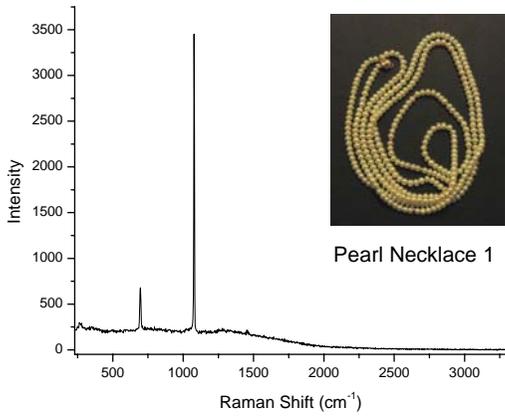

White Buddha Necklace

Greenish Bracelet
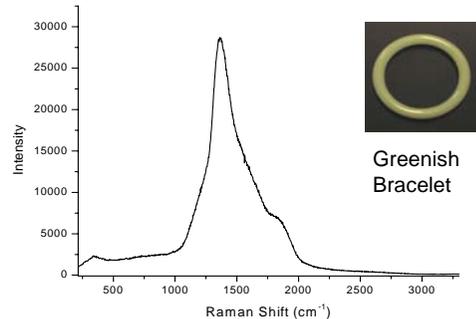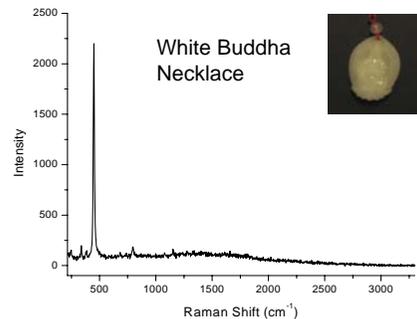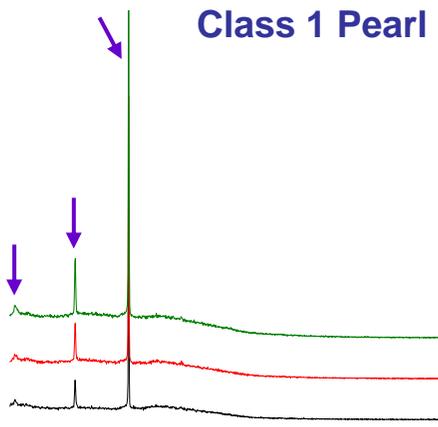
Class 1 Pearl
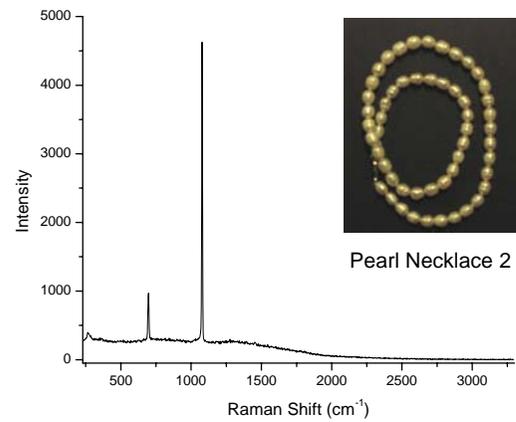
Class 1 Pearl: There are three characteristic calcium carbonate Raman peaks at 265.9, 697.0, and 1077.6 cm⁻¹.
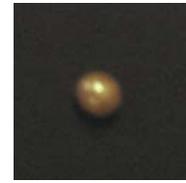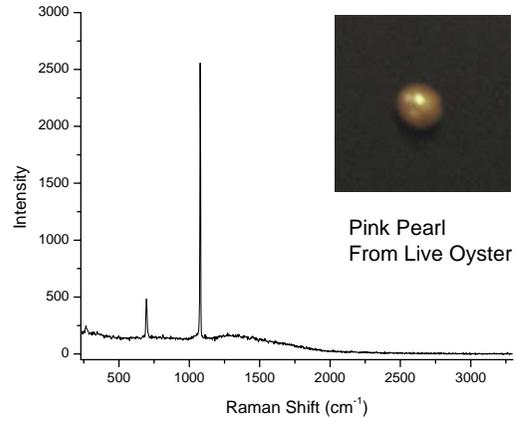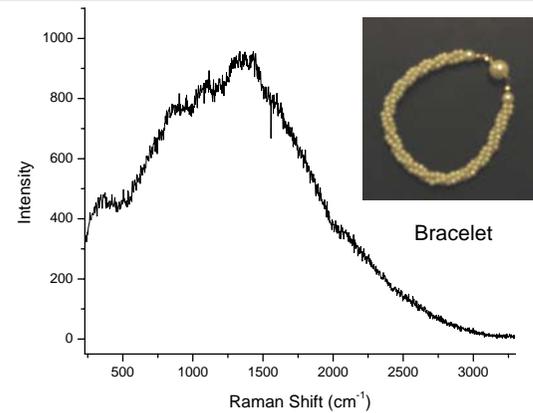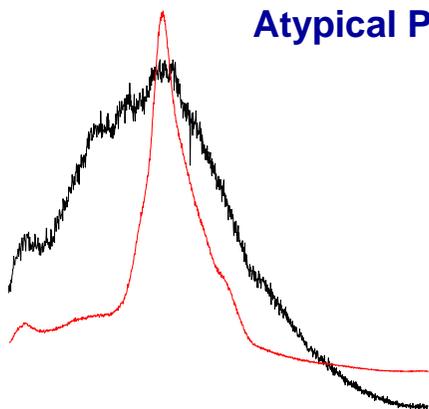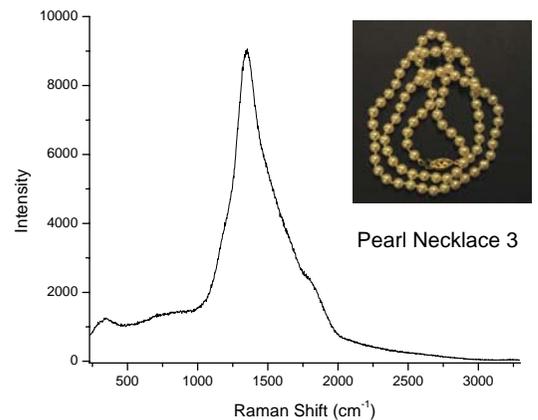
Pink Pearl
From Live Oyster

Pearl Necklace 1

Pearl Necklace 2

Atypical Pearl

Atypical Pearl: No characteristic Raman peaks are present. The Raman spectra appear to be from glass-like plastics or other materials.

Bracelet

Pearl Necklace 3

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