

FTIR and Raman Proficiency Program

Steven H. Hinrichs, M.D., Director, Nebraska Public Health Laboratory
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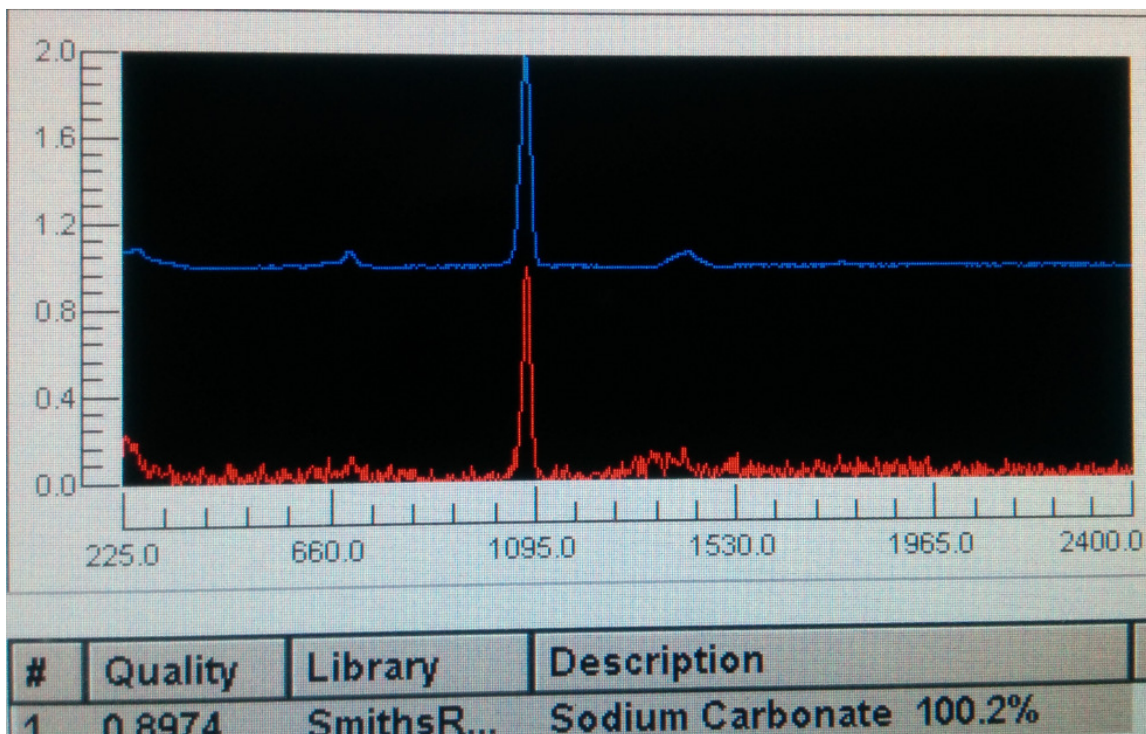
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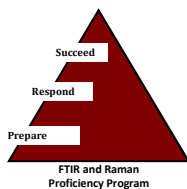
August 15, 2016

Results for July 2016 RAMAN Proficiency Testing Event

Dear Participant:

In the July 2016 Raman challenge one unknown liquid and two powders were sent. All three were one component samples, not counting water. **RAM16-4** was sodium carbonate. This is also known as soda ash and is not the same thing as sodium bicarbonate, also known as baking soda. It is a white powder that is slightly crystalline but not shiny. Sodium carbonate has the formula Na_2CO_3 and is two sodium atoms with a carbonate molecule, while sodium bicarbonate has the formula NaHCO_3 and is one sodium atom with a bicarbonate molecule. Our instrument consistently returned sodium carbonate from the Smiths Common Chemicals library as the result with a (relatively) good spectrum. Note that the spectrum is quite simple.



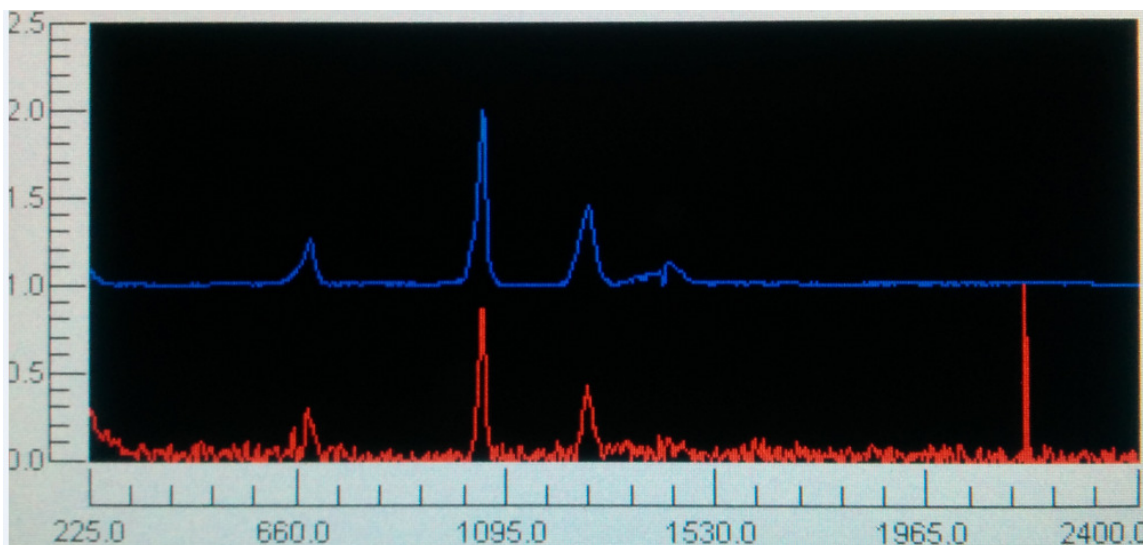


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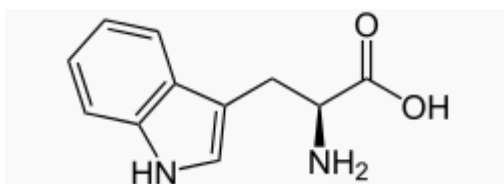
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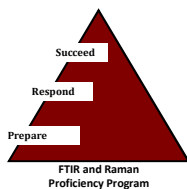
Below is the spectrum for sodium bicarbonate. It can be seen that it is more complex than the sodium carbonate spectrum.



RAM16-5 was D, L-Tryptophan. This is the turkey compound that is brought up by all basic cable news shows during Thanksgiving every year. It is an essential amino acid and is obtained through diet.



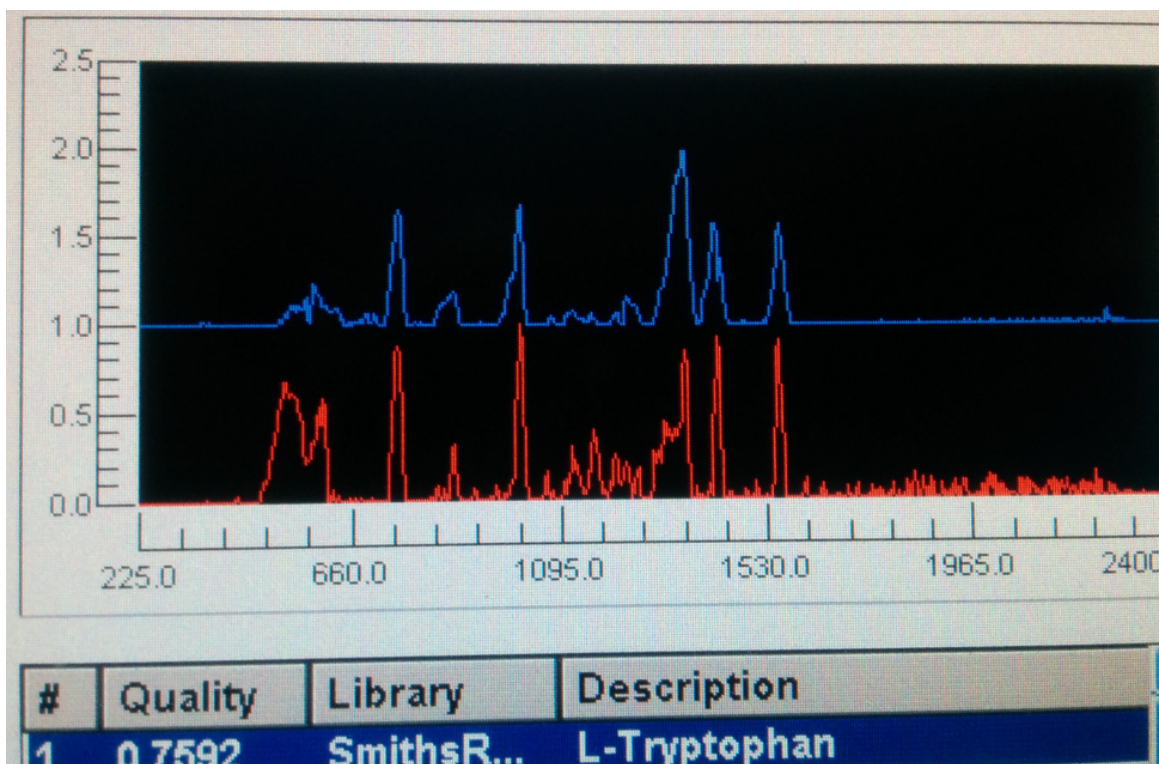
This powder was off white, pretty fine, and had an odor reminiscent of a microbiology lab. Our instrument had decent quality in the spectrum and matched consistently with tryptophan from the Smiths Common Chemicals library.



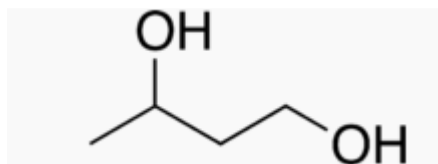
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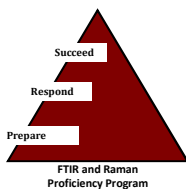
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RAM16-6 was a solution of 1,3-butanediol in water. The compound was added to water until the concentration was high enough to consistently give a good spectrum on our instrument. This compound is a small molecule with two alcohol groups (a diol). It is used in the food industry, manufacturing industry, and by the body where it can be converted to β -hydroxybutyrate (BOH).



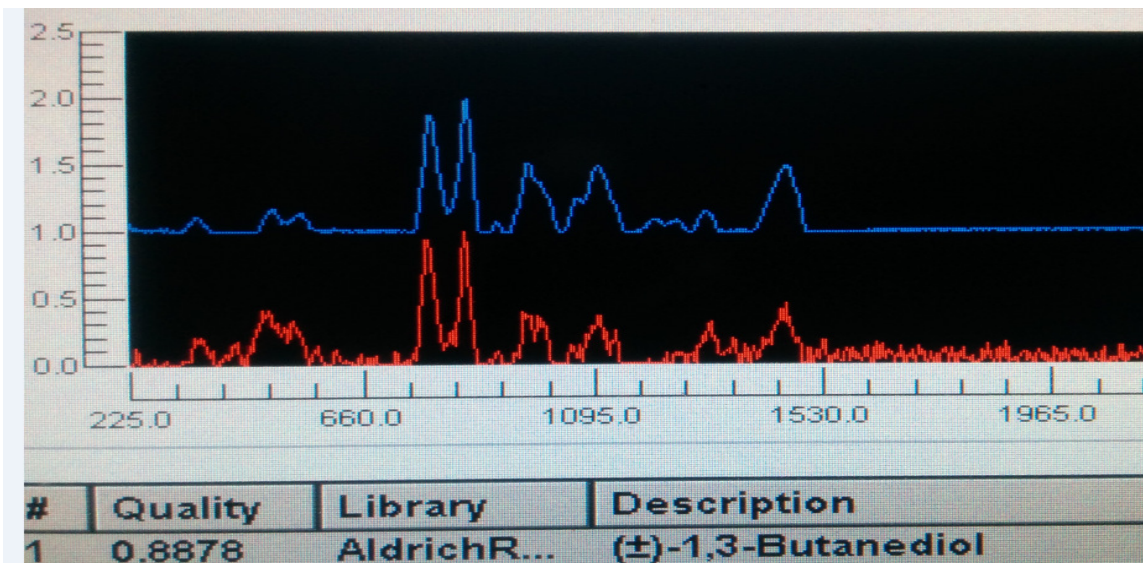
Our instrument returned 1,3-butanediol consistently, even though the spectrum wasn't of great quality. It was found in the Aldrich Raman library, which is a Raman library constructed by Sigma-Aldrich and may come with Thermo instruments nowadays.



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Individual results can be seen by visiting NPHL.org and logging into the FTIR/Raman participant portal. Individual result reports are no longer sent out. As always, please contact us with any questions you might have. This report will be posted on the FTIR/Raman page on nphl.org.

Sincerely,

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