

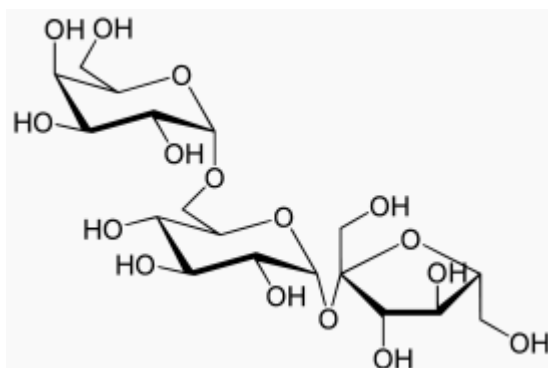
FTIR and Raman Proficiency Program

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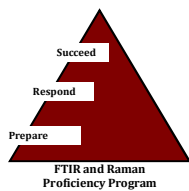
Summary Report for June 2016 FTIR Testing Event

The June 2016 FTIR testing event had three powder samples. All three were pure. **FTIR16-4** was raffinose. This is a trisaccharide made up of galactose, glucose, and fructose.



It cannot be broken down when ingested by humans, but bacteria in the lower GI tract can break it down. It is used in microbiology laboratory work and is a crystalline powder that isn't very homogenous and has larger, rectangular crystals mixed throughout.



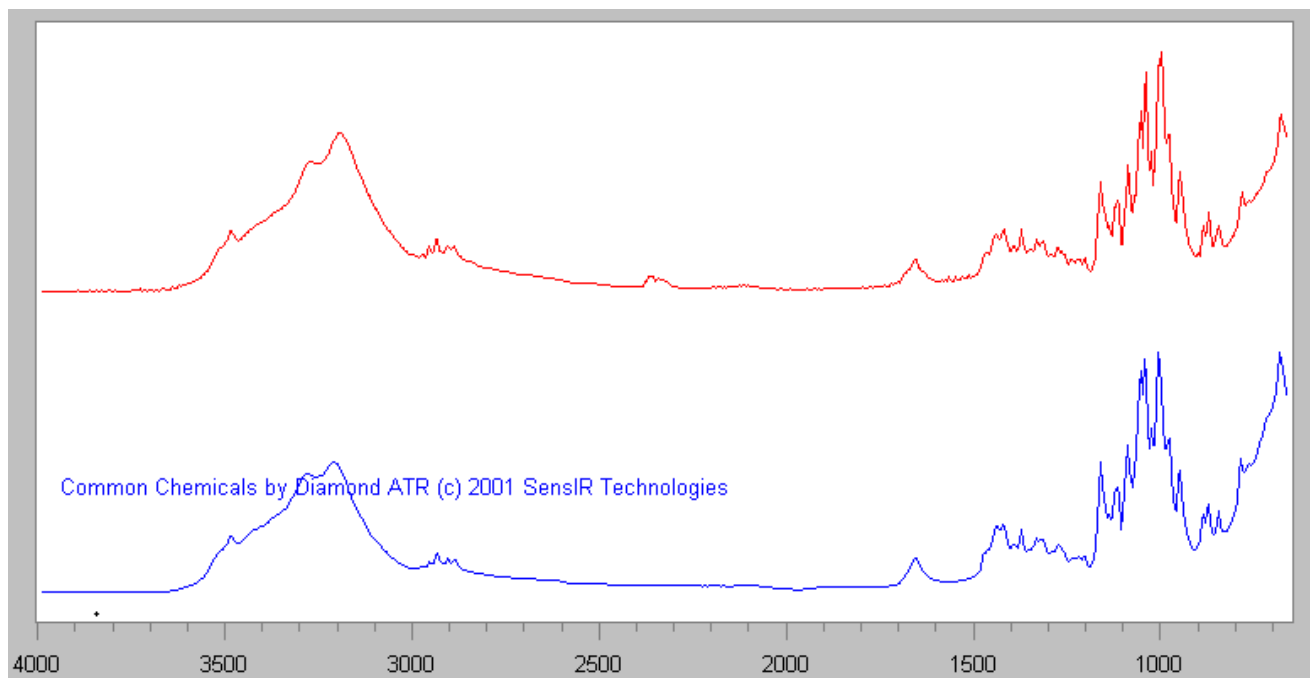


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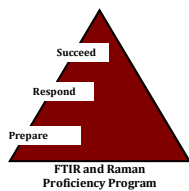
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Both the IlluminatIR and the ChemID consistently returned Raffinose as the top hit, as the spectra was very strong (shown below in red). The majority of participants correctly identified this.



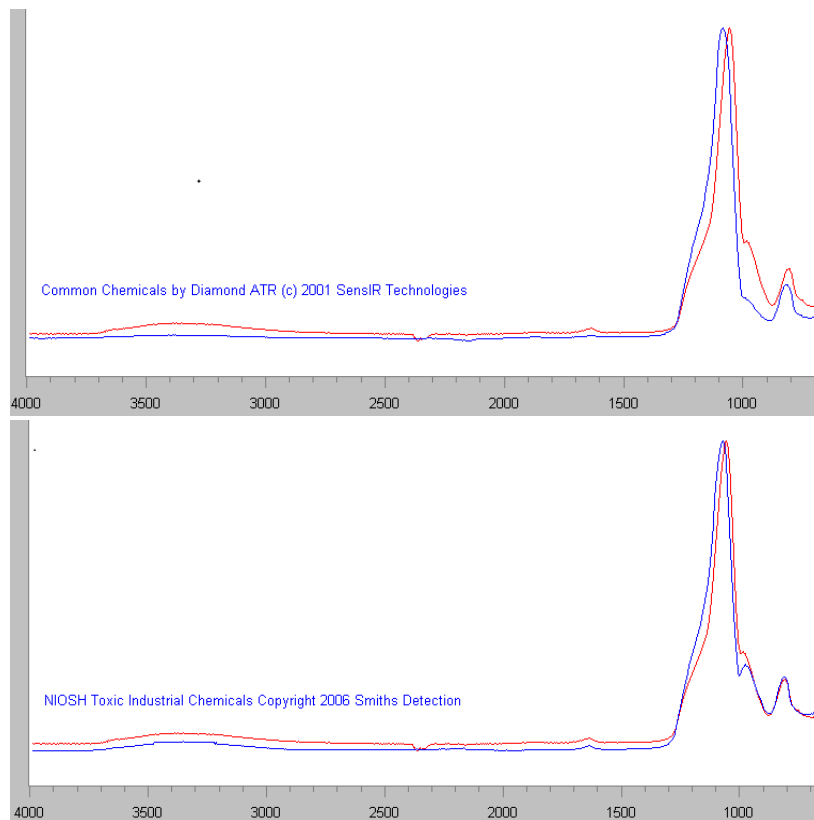
FTIR16-5 was a primarily silica powder. It was from defective solid phase extraction (SPE) cartridges, specifically Phenomenex Strata Si-1, a silica-based sorbent. It was a fine white powder. The spectrum matched up with several silica compounds. The NIOSH Toxic Industrial Chemicals library contained a spectrum that matched almost perfectly, but the Common Chemicals library spectrum matched well also, and silica was consistently returned as a hit. The majority of respondents correctly identified this as a silica compound.



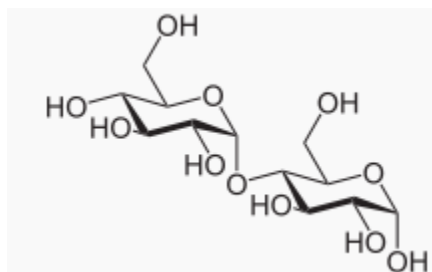
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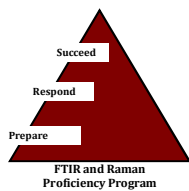


FTIR16-6 was D-maltose. This is another saccharide, but is a disaccharide instead of a trisaccharide. It is also known as malt sugar and consists of 2 glucose units.



Maltose is found throughout nature, and it is also the product of the action of amylase on starch and also when glucose is caramelized. This was a crystalline white powder, and was more homogenous compared to the raffinose.

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The IlluminatIR consistently matched the spectrum up with either maltose or glucose. Upon close visual inspection it appears that the maltose is a better fit, but for whatever reasons the software search algorithm sometimes chose glucose as the best match. The first screen shot is the glucose hit, followed by the maltose hit.

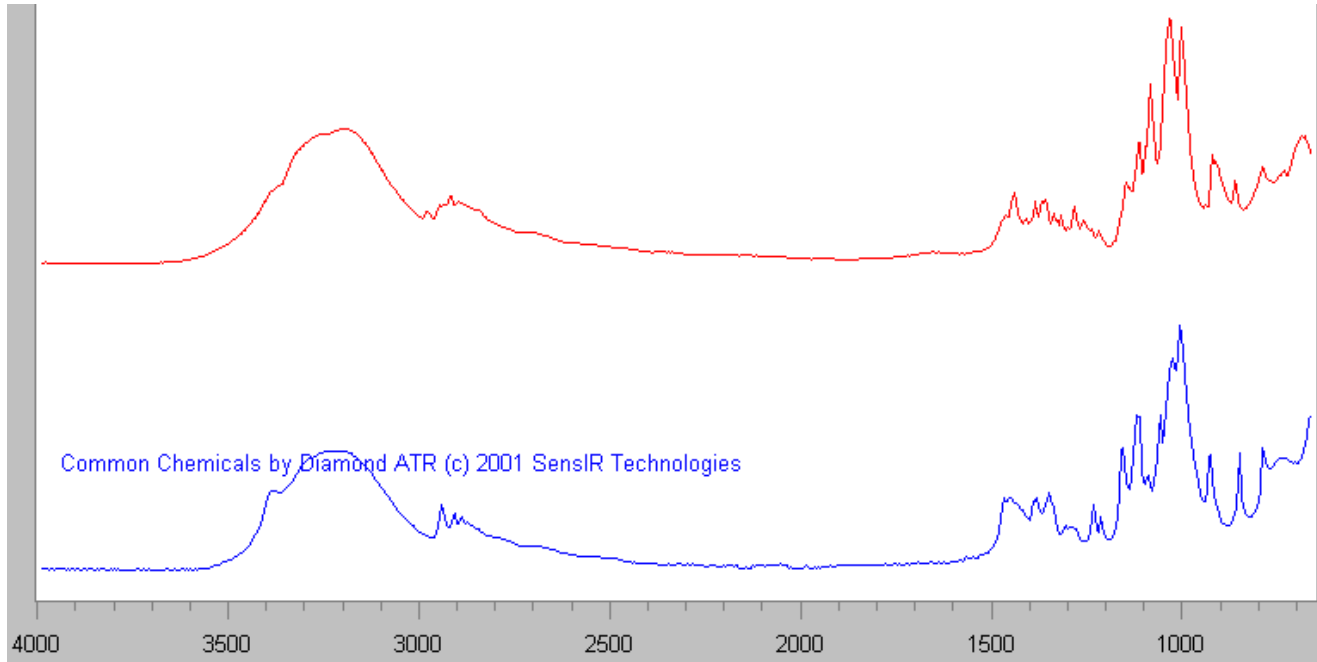


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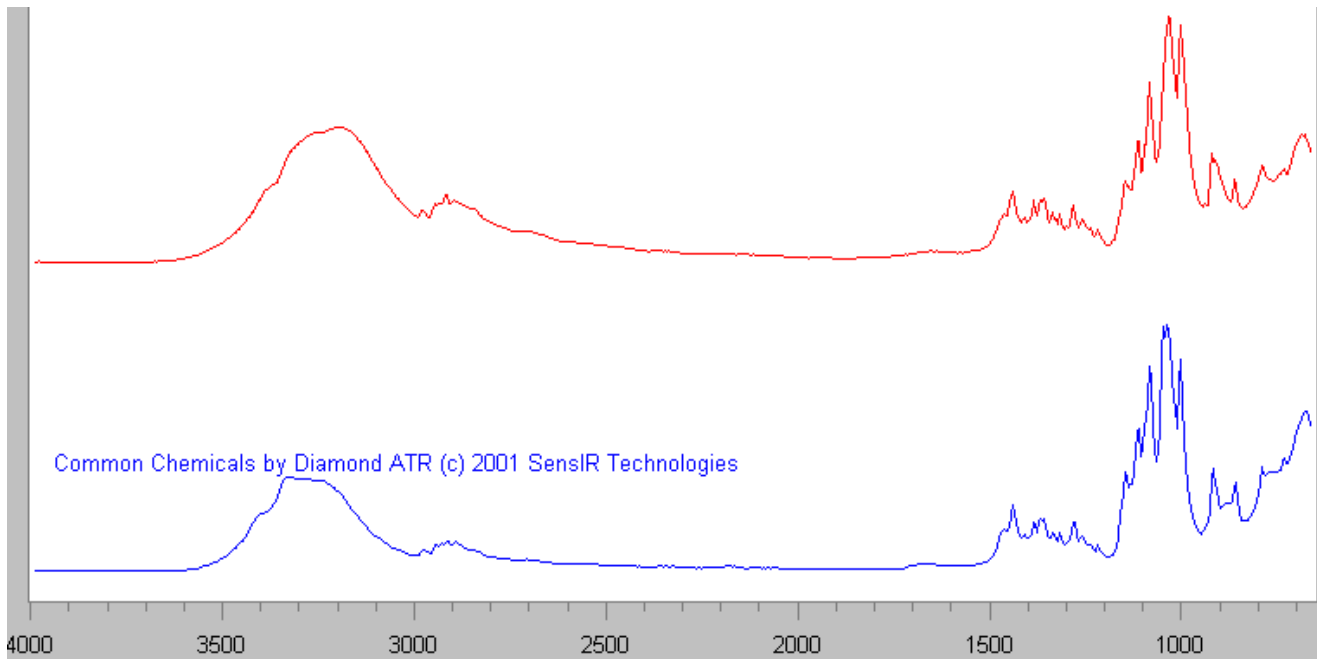
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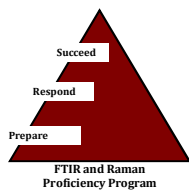
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Maltose-Glucose:



Maltose-Maltose:





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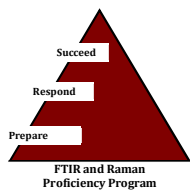
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Either way, upon investigating these two compounds one would find out that the maltose is made up of glucose units, and thus the difference in results wouldn't matter in a real-life situation. The majority of respondents correctly identified this.

Individual results can be found on the nphl.org website. Log in to the FTIR Program portal and enter facility ID. Click on the report for this event and a pdf file will be generated. As always, please contact us with any questions.

Regards,

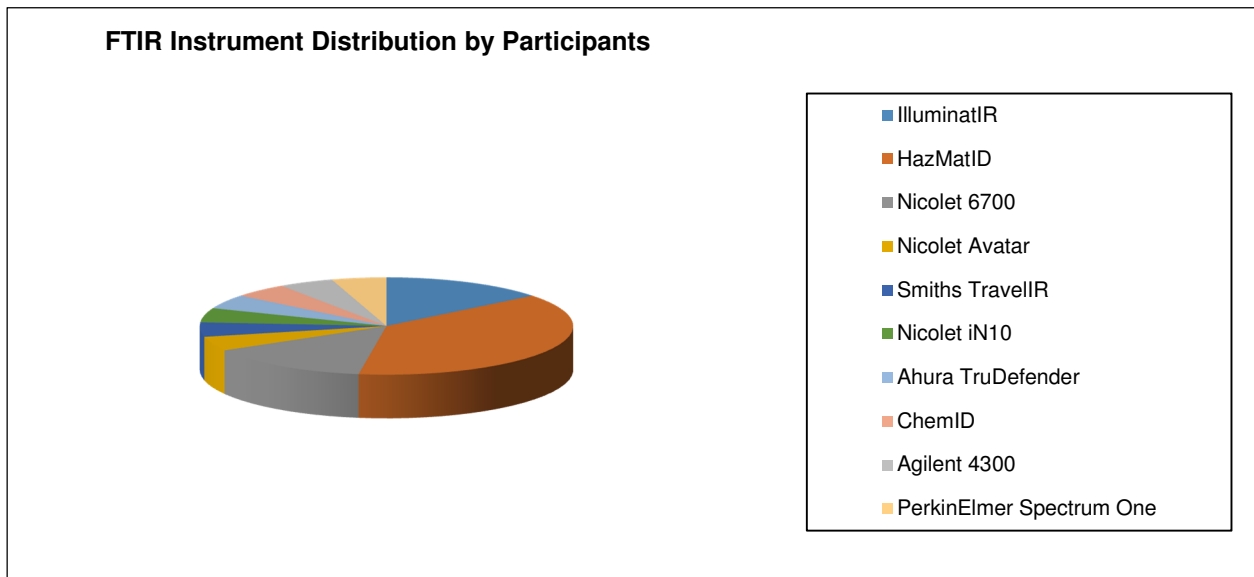
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Event Performance:

A summary of results reported is shown in the following table:

PT ID	Compound	Match	Partial Match	No Match	Comments
FTIR16-4	Raffinose	91%	-	9%	
FTIR16-5	Silica	82%	5%	13%	
FTIR16-6	D-maltose	91%	-	9%	