



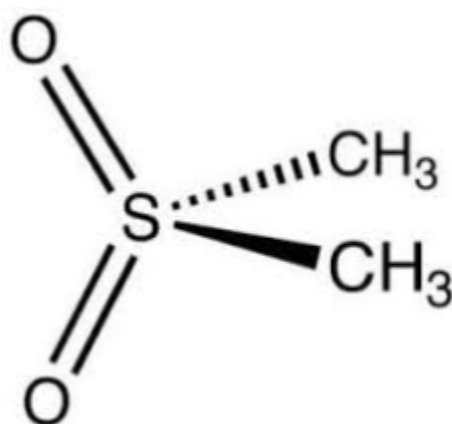
FTIR and Raman Proficiency Program

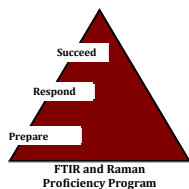
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Summary Report for March 2018 FTIR Testing Event

The March 2018 FTIR testing event had three powder samples. **FTIR18-1** was dimethyl sulfone. This is a crystalline white powder.





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It is a naturally occurring organic sulfur compound, and is available through natural health stores and websites as a dietary source of sulfur. It is also used as a common cutting agent for methamphetamine. The crystal form can range from what was used for the PT (small crystals) to very large crystals resembling methamphetamine. Below is an image of larger dimethyl sulfone crystals.



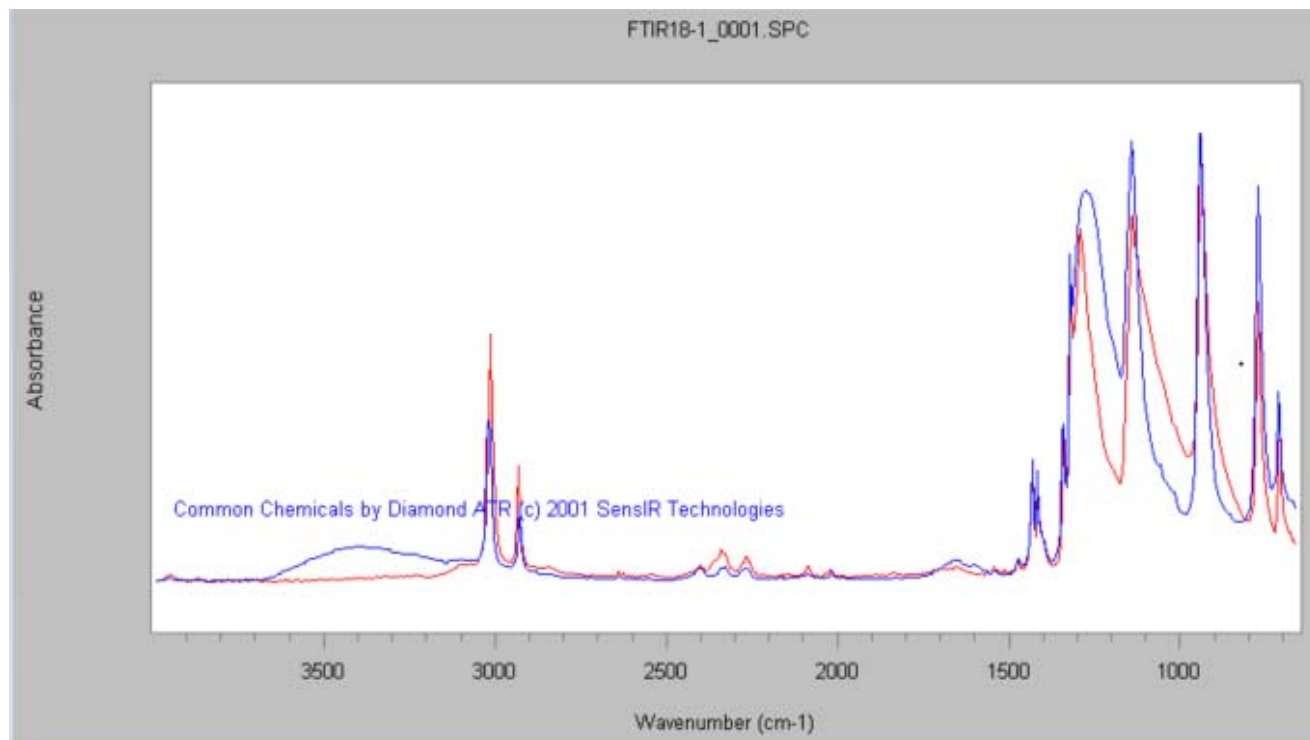
This sample had a good match on our instrument, with the first result being methyl sulfone (synonym) and a > 80% match. Something that was a little different with this sample was the narrower peak from 1200 – 1300 cm^{-1} . Normally we see the broader peak that is present in the library spectrum. The compound is listed in the Smiths common chemicals library. All participants correctly identified this.



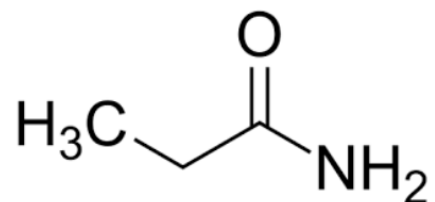
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FTIR18-2 was a large crystalline material, propionamide. This is a simple compound and is the amide of propionic acid. This compound does not seem to have many uses other than to synthesize other compounds.





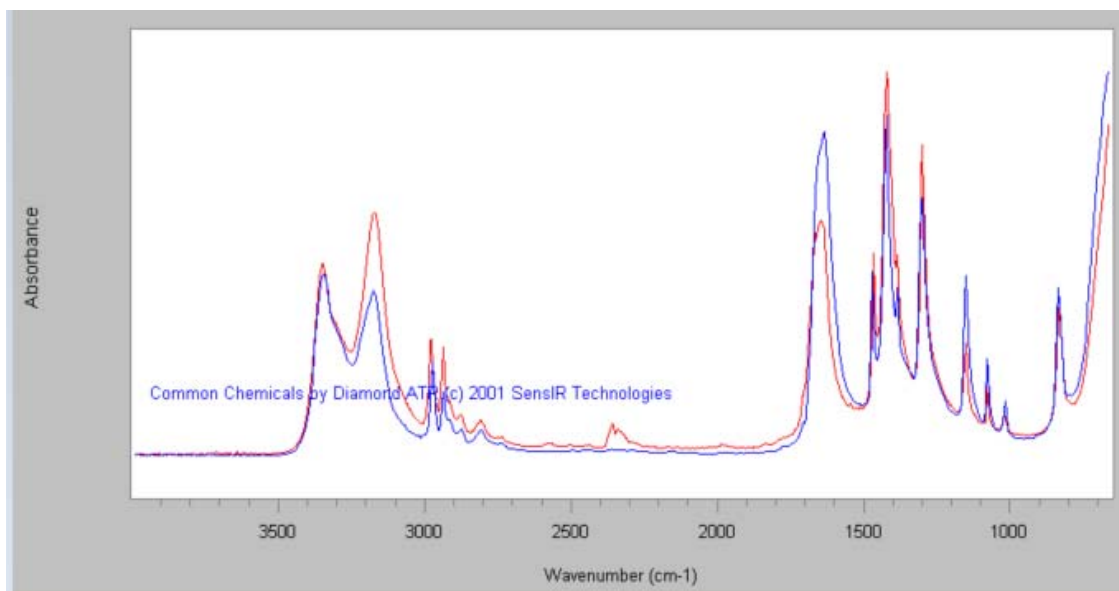
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Our instrument gave a great match and was the first result. This compound is in the Smiths common chemicals library.



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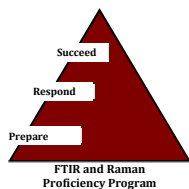
This was not to be confused with a previous compound, tripropionin, which was a liquid. All participants correctly identified this.

FTIR18-3 was a fine off-white powder. It was a mixture of a protein and amalgamated sodium chloride.



Amalgamating the sodium chloride turned it into a fine powder, nowhere near the crystal form that most people expect. This made macroscopic identification of a mixture very difficult, whereas normal sodium chloride would be much more obvious. There was also a slight color variation, but not obvious. Finally, we noticed while working with the mixture that after disturbing the weight boat several times, small holes appeared in the off-white powder (protein), where the salt crystals sunk to the bottom. Under a microscope, the presence of different crystals would be obvious.

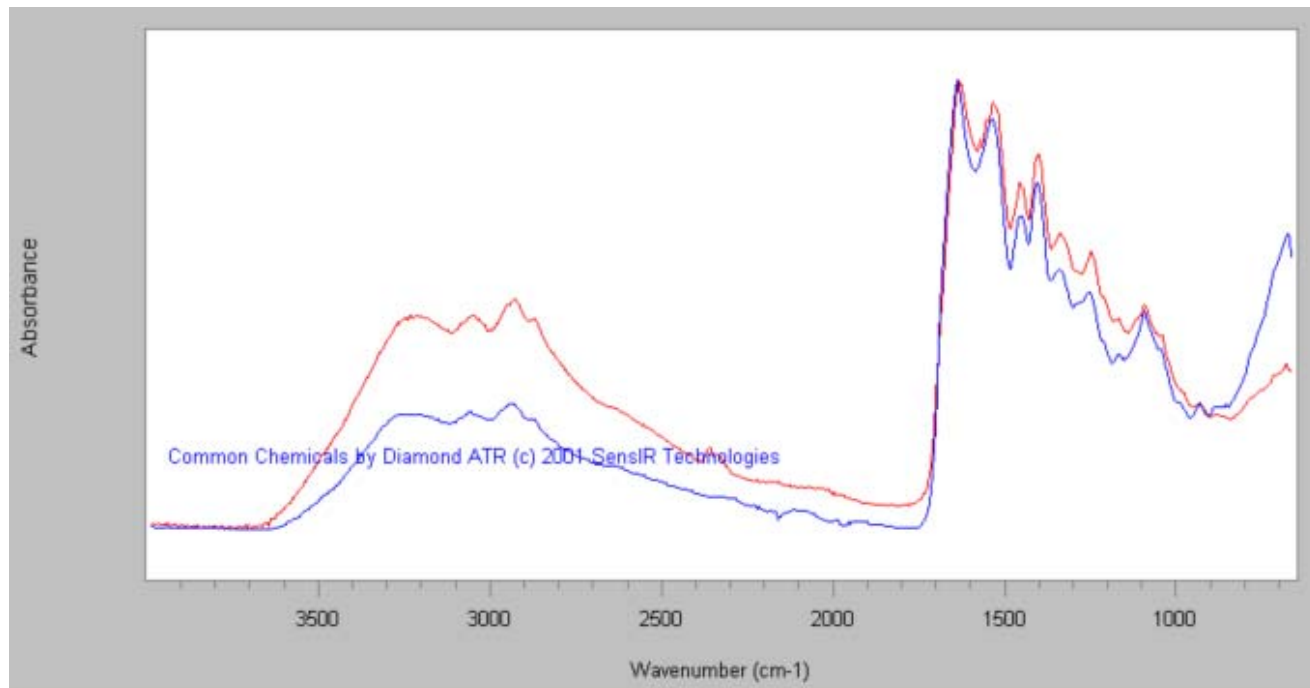
Since the sodium chloride is IR-inactive, its only purpose here is for confusion. The idea of discovering a second compound but being unable to identify it would likely throw an unknown variable into a situation. The spectrum we obtained was a typical protein one, and the first several matches were proteins. The majority of participants identified the protein portion, and less than 5% stated that a second compound was present.



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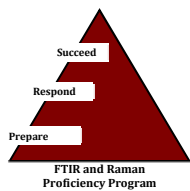
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Individual results can be found on the nphl.org website. Log in to the FTIR Program portal and enter facility ID. Click on the report for this event and a pdf file will be generated. As always, please contact us with any questions.

Regards,

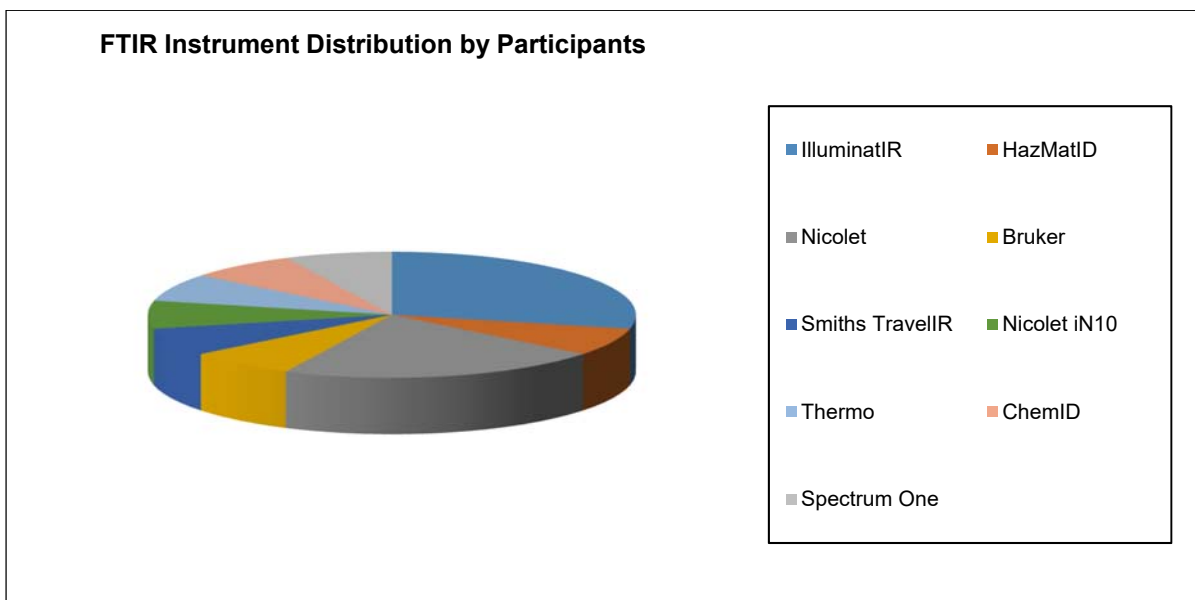
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Event Performance:

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

| PT ID | Compound | Match | Partial Match | No Match | Comments |
|----------|------------------|-------|---------------|----------|----------|
| FTIR18-1 | Dimethyl Sulfone | 100% | - | - | |
| FTIR18-2 | Propionamide | 100% | - | - | |
| FTIR18-3 | Protein/NaCl | 93% | - | 7% | |