Acquiring Raman Spectra with Portable Raman Spectrometer Thermo Scientific AhuraFD

Created by: Annette Colón, Edwin Caballero

Manager: Samuel Hernández-Rivera

SOP-01	Annette Colon Edwin Caballero		University of Puerto Rico at Mayagüez
Effectivity: September/14/2022	Acquiring Raman spectra with portable Raman spectrometer Thermo Scientific Ahura FD		Revised by:
Revised:			Approved by:

This SOP uses the following:

- Instrument: Thermo Scientific AhuraFD portable Raman spectrometer
- Laser: 785 nm $\pm$0.5 nm, 2 cm^{-1} linewidth
- Spectral Range: 250 – 2875 cm^{-1}
- Laser Output Power: 300 mW

RAMAN SPECTROMETER SETUP

1. **Open** suitcase with Raman spectrometer.

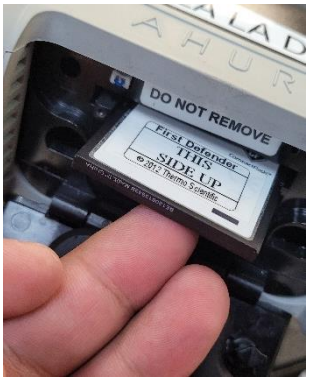



2. **Pick up** Raman spectrometer from the suitcase.

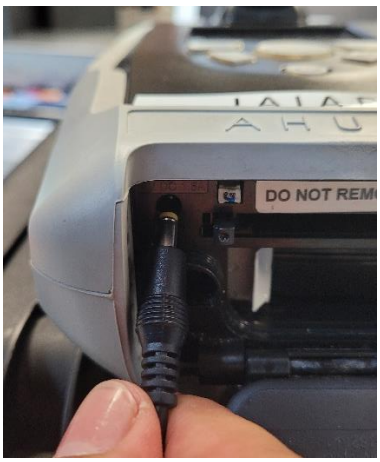
3. **Rotate** both lines clockwise to access the bottom part of the portable spectrometer.


4. **Insert** SD memory inside the portable Raman spectrometer.

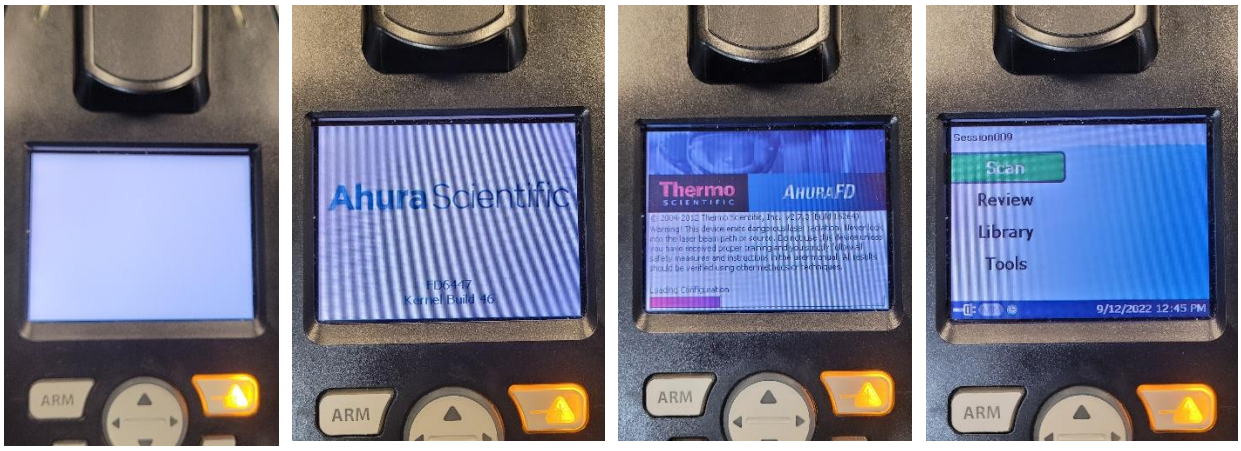




5. **Plug and connect** power source to the portable Raman spectrometer.

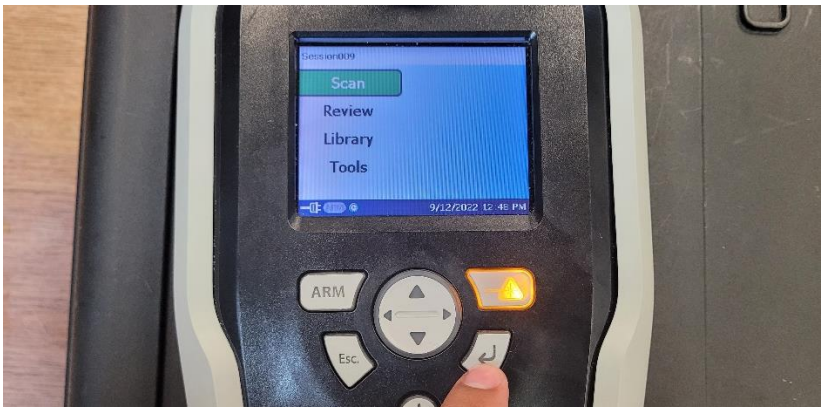
Portable Raman spectrometer starting



DO NOT MOVE RAMAN SPECTROMETER
INSTRUMENT TURNS OFF EASILY

CREATE NEW DATA FOLDER (SESSION)

1. **Choose** “Scan” by pressing the Enter button (↵).



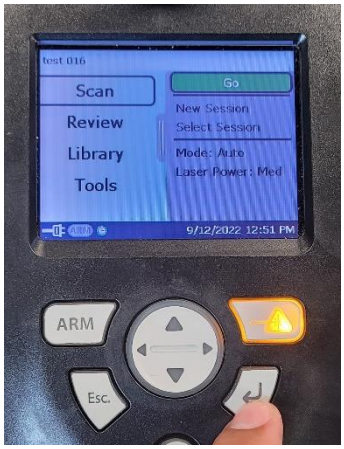
2. **Move down and press Enter** to create new data folder (session).

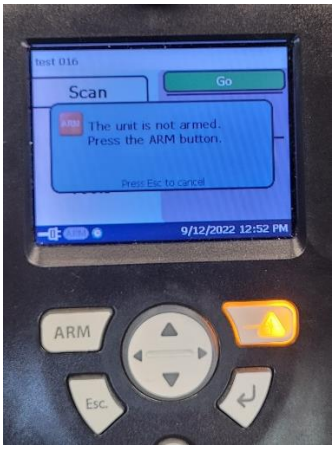
3. **Delete text and write name** for the new data folder (session). **Choose** “Done”.

ACQUIRE RAMAN SPECTRA

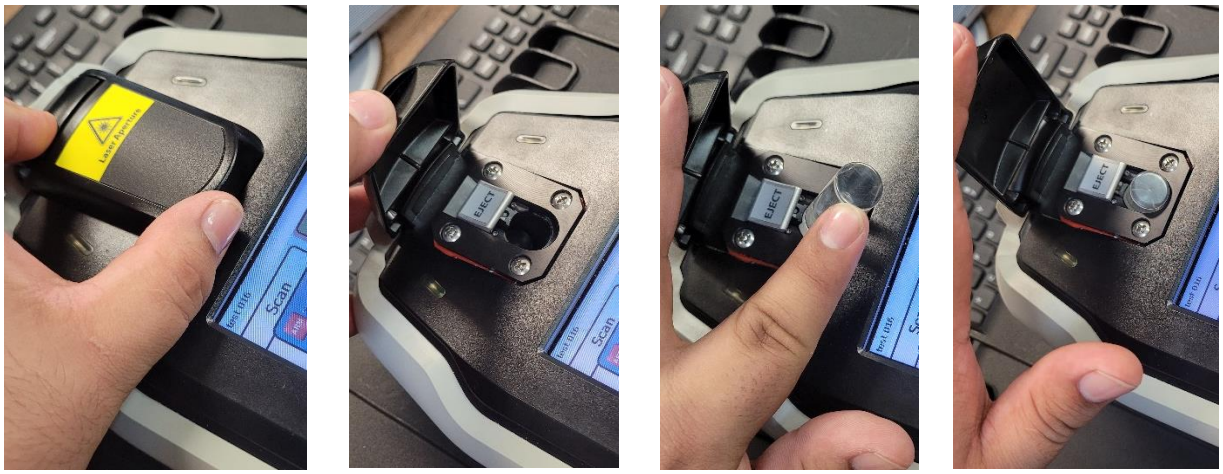
1. **Choose** “Scan” by click Enter, scroll down with down arrow, place “Auto” for Mode if no specific exposure time is needed, and choose desire laser power below.

2. **Choose** “Go” by going upwards towards the “Go” button and clicking Enter.

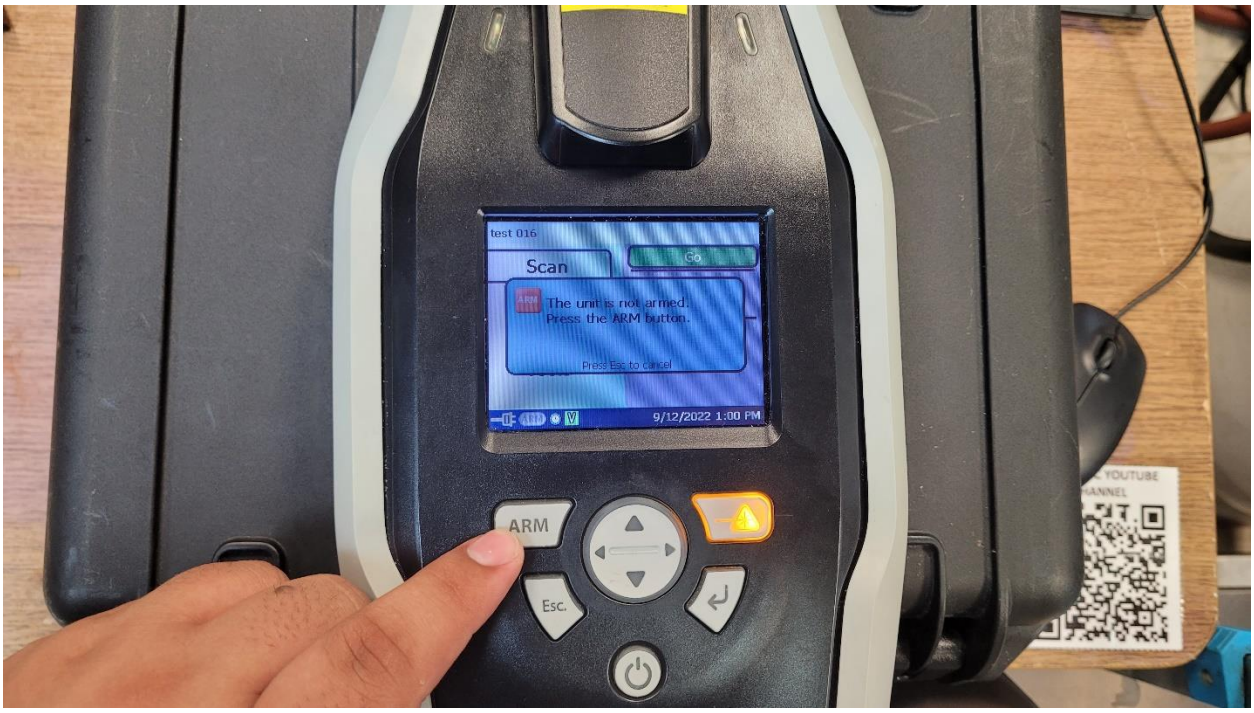




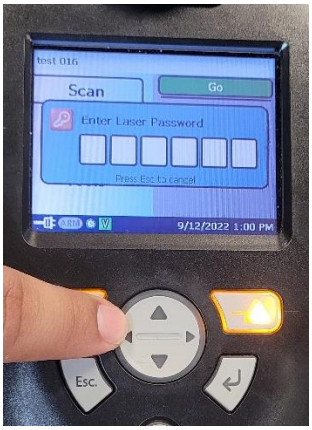
3. **Place** sample inside the internal sampling area.

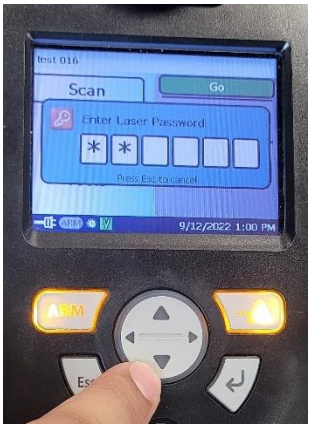


4. **Press** “ARM” button to indicate that the Raman contains a sample.

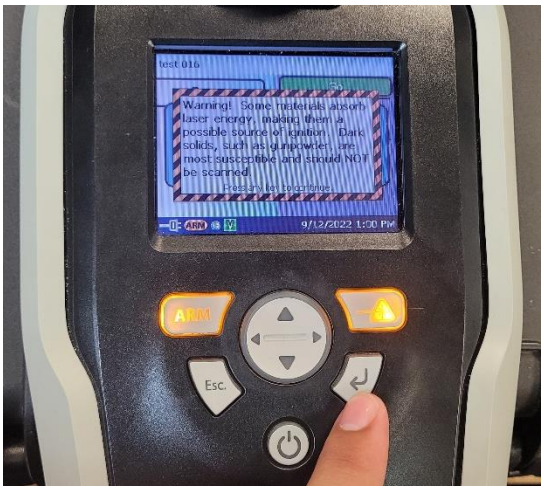


5. **Enter** Laser password by pressing left arrow (LA), left arrow (LA), and down arrow (DA).

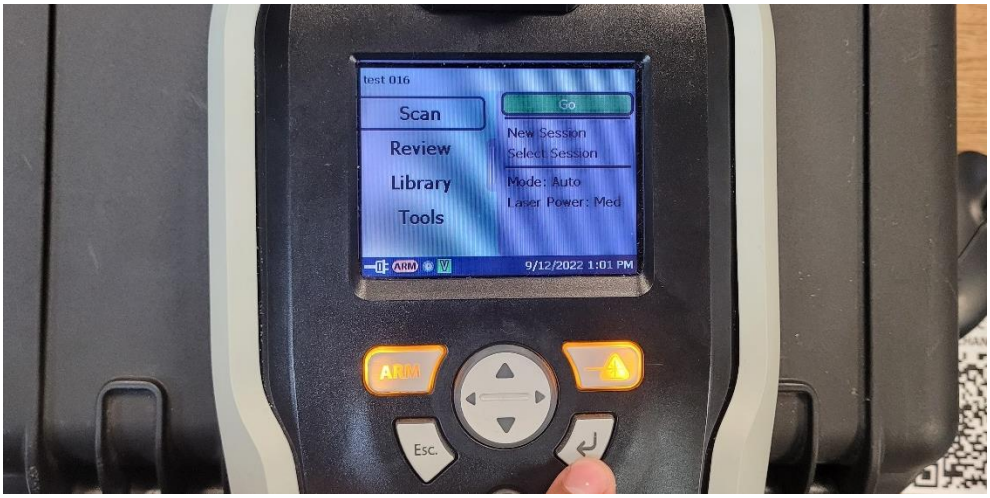




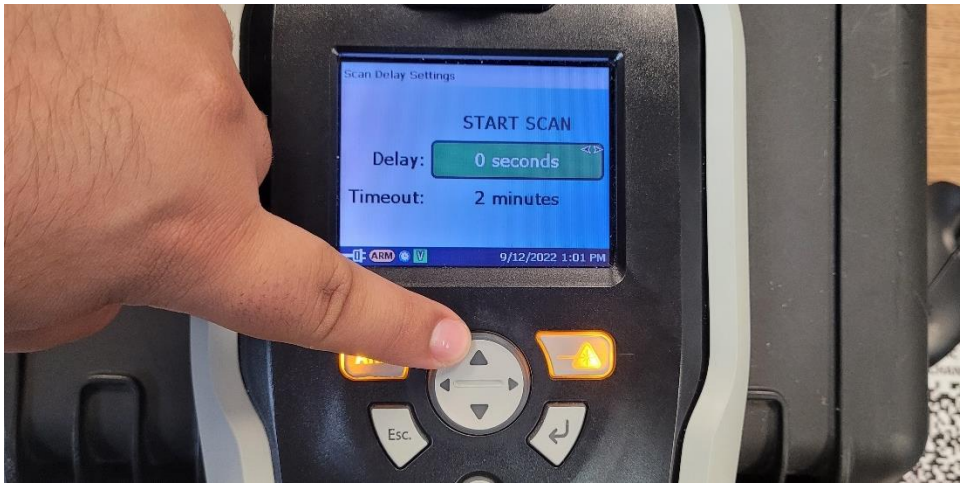
6. **Press** ENTER twice.



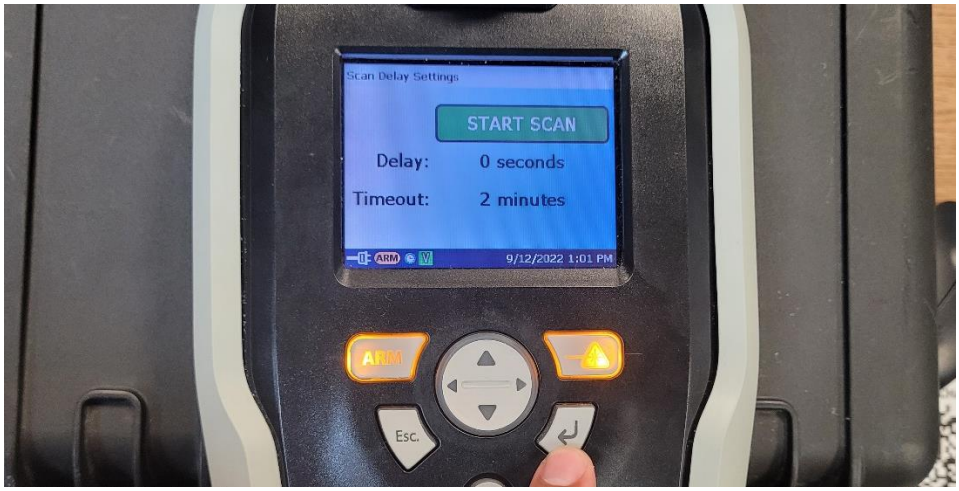
7. **Choose** “Scan” and “Go”.



8. **Choose** the number of seconds to wait before acquisition (**Delay**) and the maximum minutes that the spectrometer should take to measure the sample (**Timeout**).



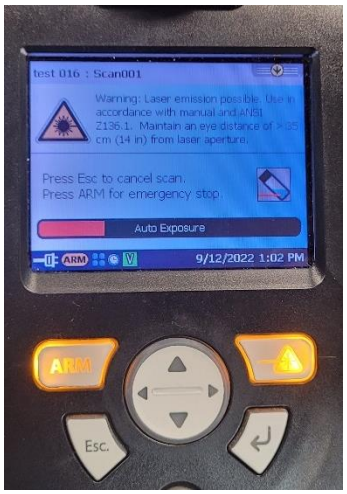
9. **Press** up arrow and Enter to start the Raman spectra acquisition (Scan).



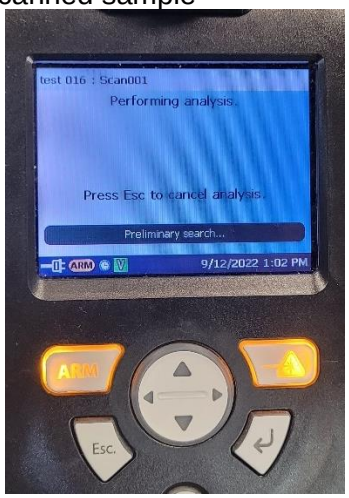
10. **Press** left arrow and Enter to start scan even though a Delay time was not determined. This option does not appear if Delay time is different of zero.

Acquisition starts

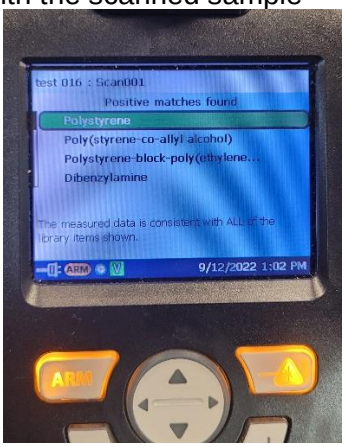
Spectrometer acquires spectra



Spectrometer searches library spectra similar to scanned sample

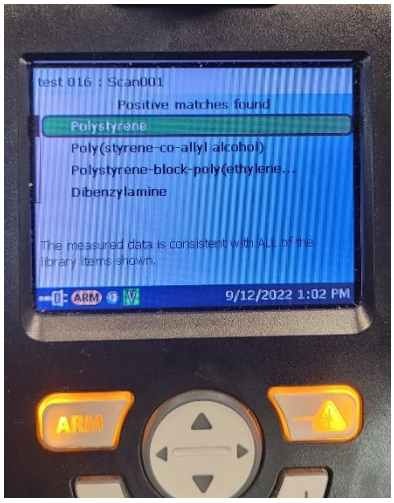


Spectrometer shows all the matching spectra in the library with the scanned sample

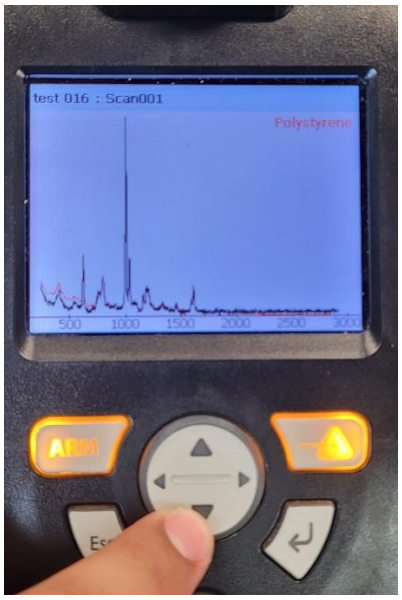


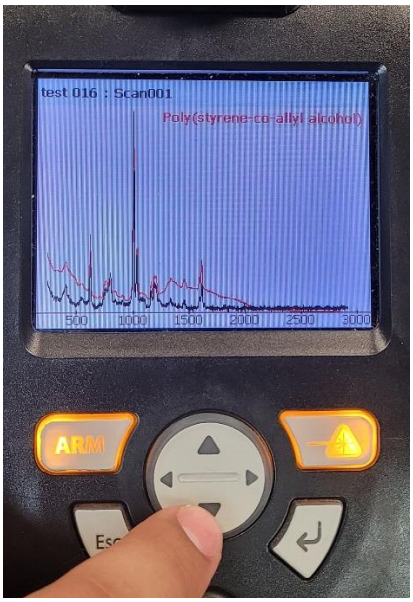
COMPARE LIBRARY SPECTRA WITH ACQUIRED SPECTRUM

1. **Click** on the desired library spectrum to view by pressing Enter on the name and then Enter on the option “View Spectrum”.

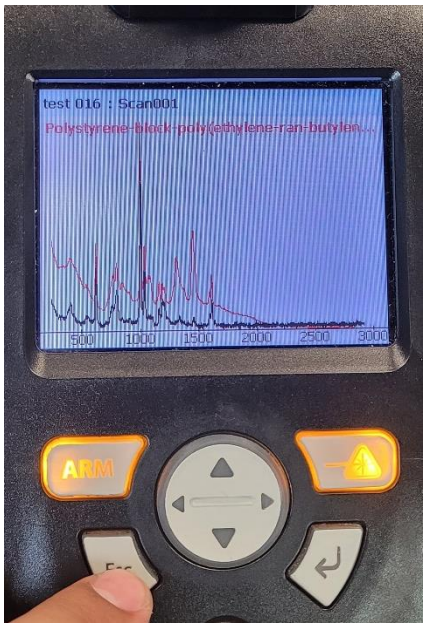


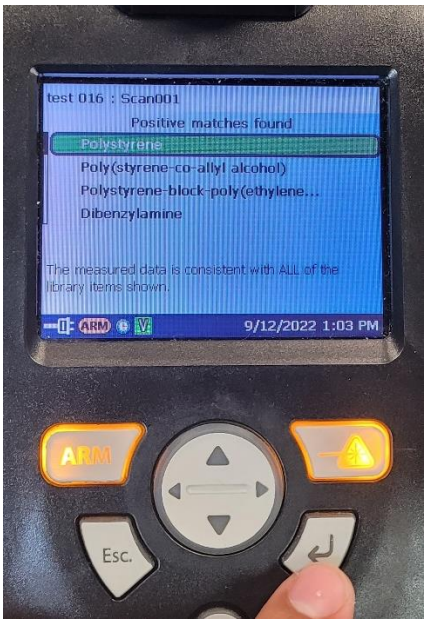
2. **Compare** the spectrum acquired (black) with different library spectrum (red) by clicking on the down arrow.





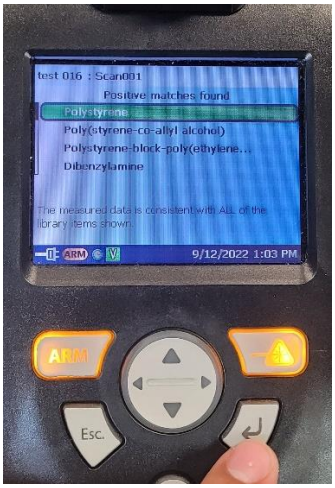
3. **Close** view by pressing the “Esc” button.

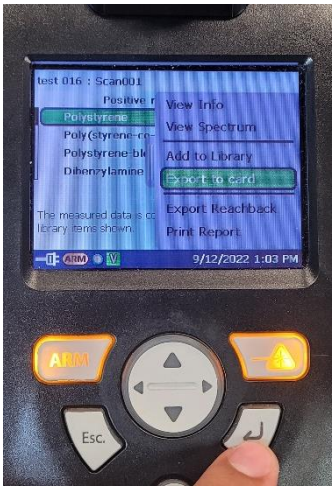




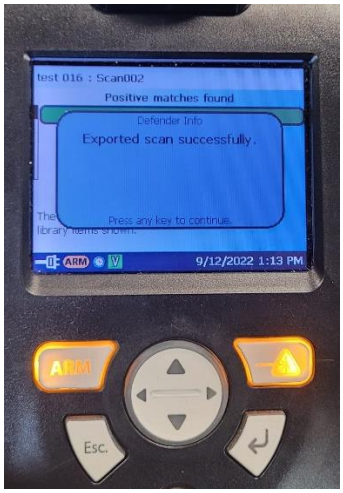
TURNING OFF SPECTROMETER

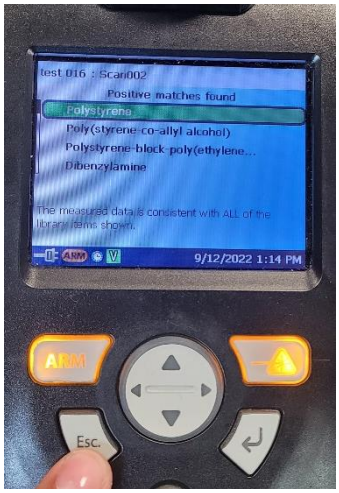
1. **Export** desired data by selecting the desired data and pressing Enter and select “Export to card” and press Enter.





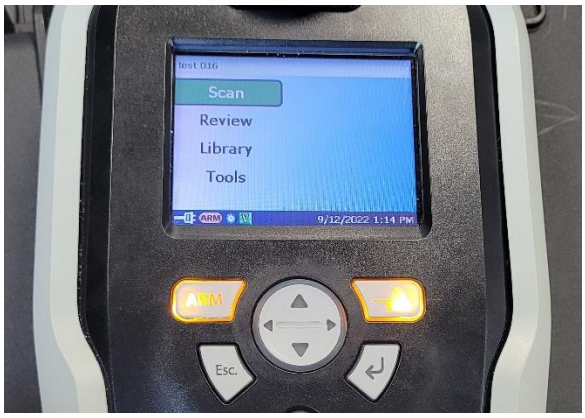
Message will appear saying that the export was successful. Press Enter and it will go back to the library spectra option.





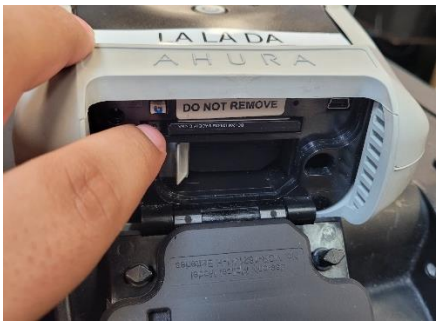
TURNING OFF SPECTROMETER

1. **Clear** spectral data on the spectrometer.



TRANSFERING DATA FROM SPECTROMETER TO COMPUTER

1. **Press** button at the left of the microSD port to remove microSD card.



2. **Insert** microSD card inside the microSD to USB adapter.


3. **Connect** the USB to microSD adapter cable on the microSD to USB adapter.


4. **Connect** the USB to microSD adapter cable to the computer to transfer files.

TROUBLESHOOTING

1.

Advisor Signature _____

Co-Advisor Signature _____