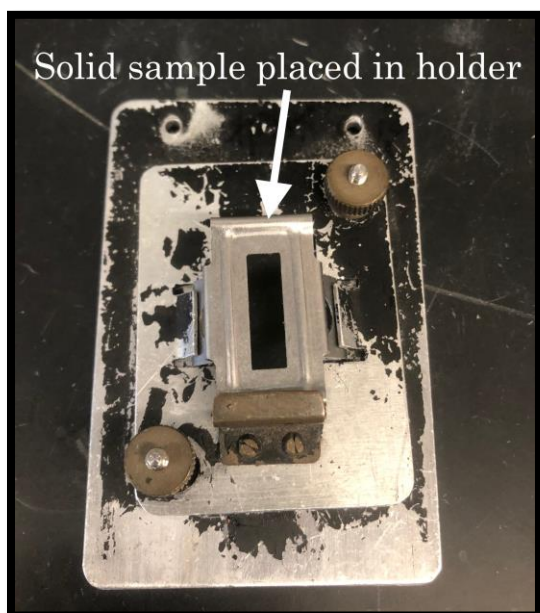


TRANSMISSION MODE FTIR Sample Preparations Procedures

1. No Cell
 - a. Solid Samples
 - i. Transparent/Opaque Solids



- ii. Thin Film

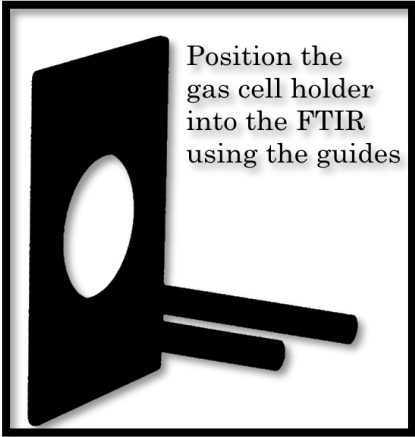


2. Cell

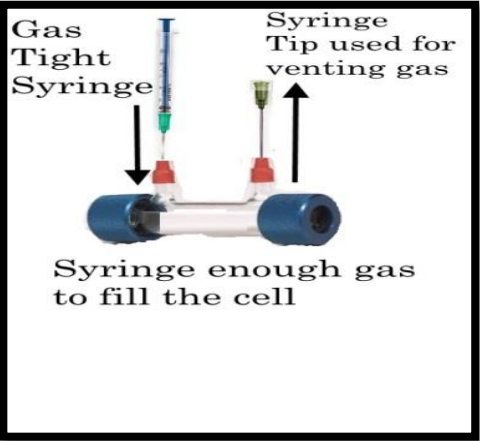
a. Gas Cell

i. Preparation of a Gas Cell (select the appropriate cell windows required)

1.




Position the gas cell holder into the FTIR using the guides
2.



Gas Tight Syringe

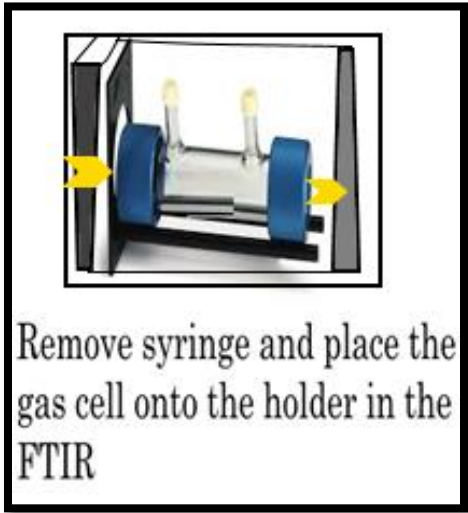
Syringe Tip used for venting gas

Syringe enough gas to fill the cell
3.

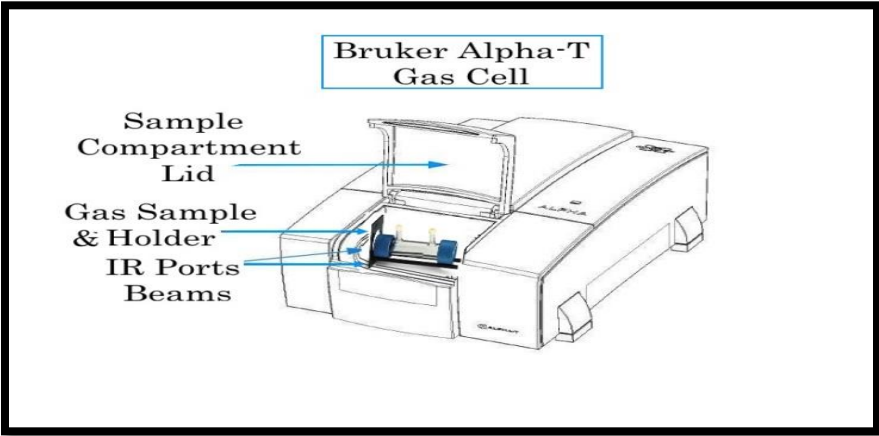


Gas Tight Syringe

Remove venting syringe tip and fill till resistance is met
4.



Remove syringe and place the gas cell onto the holder in the FTIR
5.



Bruker Alpha-T Gas Cell

Sample Compartment Lid

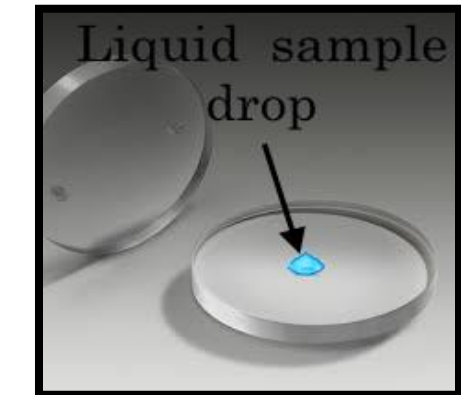
Gas Sample & Holder

IR Ports

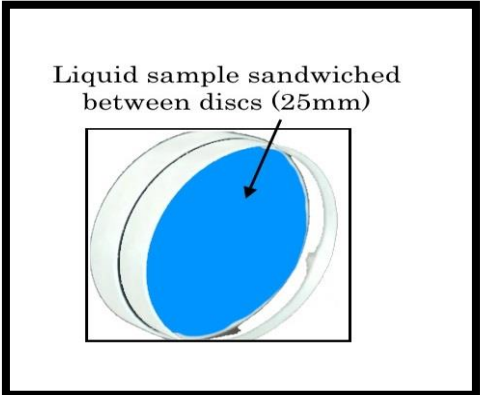
Beams

6. Clean the gas cell by removing the septa, and letting the cell vent by N₂ purge.

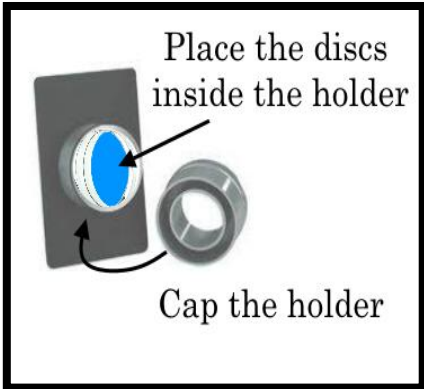
- b. Liquid Samples
 - i. Preparation of a Liquid Cell (select appropriate cell windows required)
 - 1. 25mm Salt Cells (NaCl, KBr, CsBr)



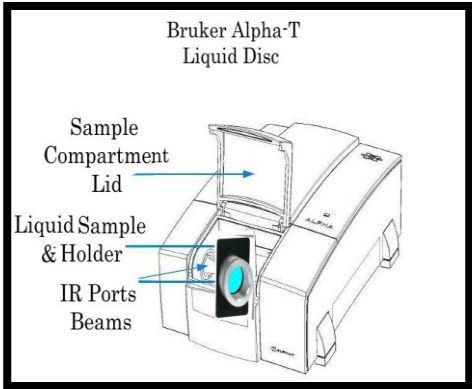
a.



b.



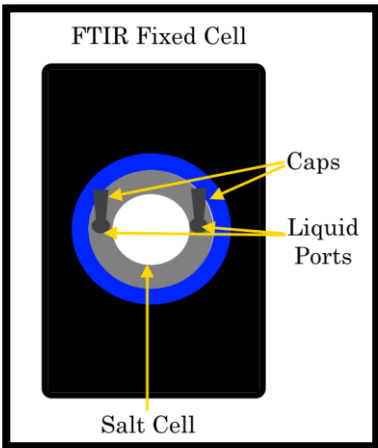
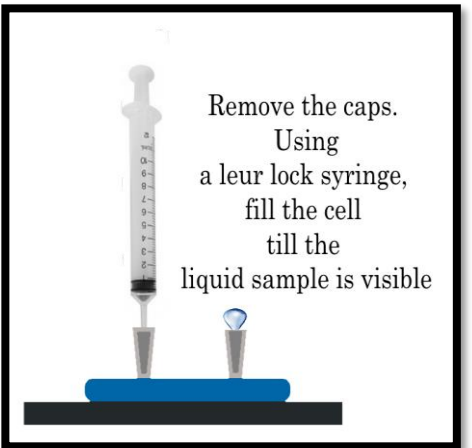
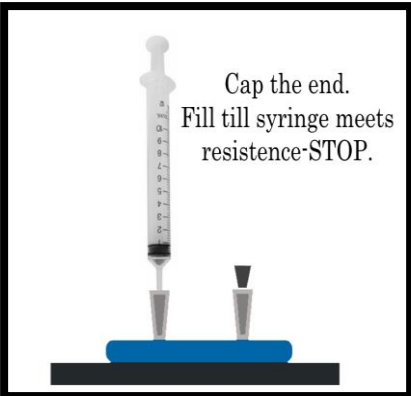
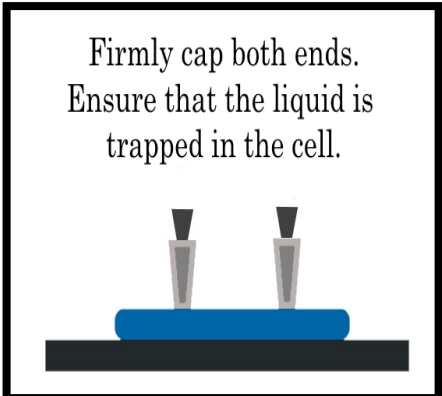
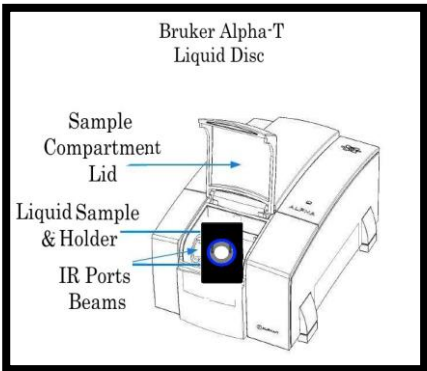
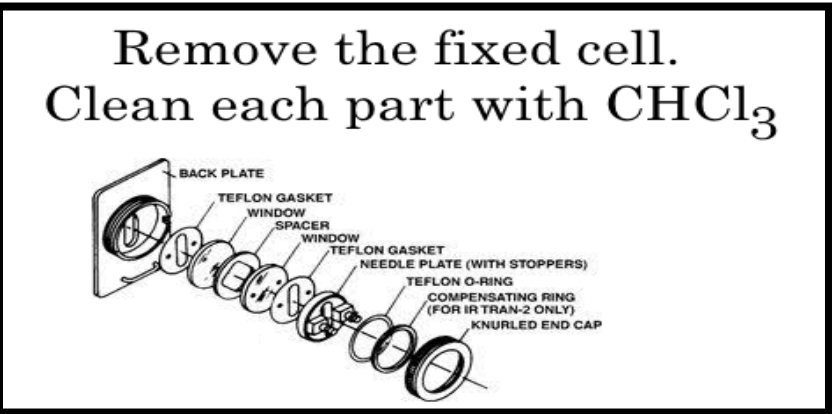
c.



d.

- e. Clean the cell by removing it from the holder and cleaning with CHCl_3 .


2. 25mm Fixed Salt Cells (NaCl, KBr,CsBr)

- a. 
- b. 
- c. 
- d. 
- e. 
- f. 


c. Solid Samples
i. Nujol Mull

1.

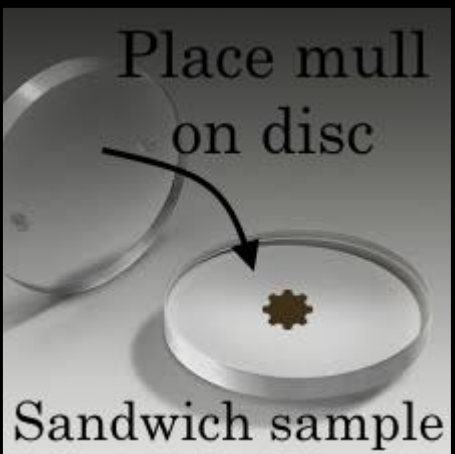
Grind the solid sample to a fine powder (consistency of powdered sugar) in a agate mortar and pestle.


2.

Dispense 1-5 drops of nujol into the mortar.
Grind the mixture to a thick paste (consistency of honey)

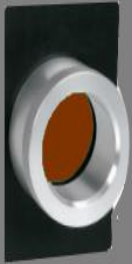

3.

Place mull on disc

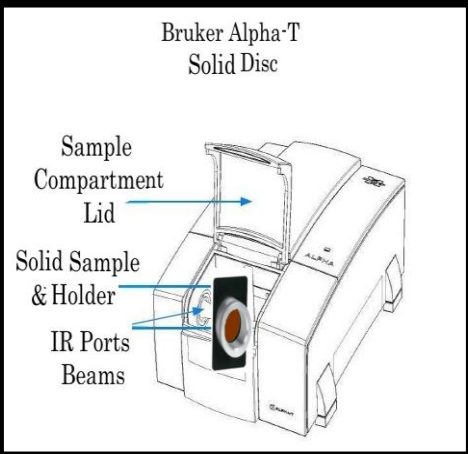


Sandwich sample
4.


Place the cell into the holder and cap


5.

Bruker Alpha-T Solid Disc


6.

Clean the cell and agate mortar and pestle with CHCl_3



ii. KBr Pellet

1. 

KBr Pellet Assembly

Labels: Pellet Removal, Die Base, Anvil, Die Cap, Pellets
2. 

Place the cap and one of the pellets onto the base
3. 

Sample & KBr

Grind ~1-5mg of the sample with 100-1000mg of dry KBr in a agate mortar. Reseal the KBr bottle. Ensure that the sample and KBr are thoroughly mixed to a fine consistency (of powdered sugar). The absorption of water by the KBr necessitates that this process (and the next) are done as quickly as possible
4. 

KBr Pellet Completed

Place enough of the mixture to cover the bottom pellet die (no silver showing). Place the second die and the anvil into the assembly. They should easily drop inside without much effort applied.

Pressing KBr Pellet

Place the completed pellet assembly in 40T Press.

Lock the safety shield.

Turn the knob clockwise to begin to build pressure.

Crank the shaft to build pressure.

Stop at 5 metric tons.

Hold for 2-3 minutes.

Turn the knob counter-clockwise to release the pressure.

Unlock the shield remove the pellet assembly.

5.

KBr Pellet Removal from the assembly

Turn the pellet assembly upside down on a table, holding the anvil.

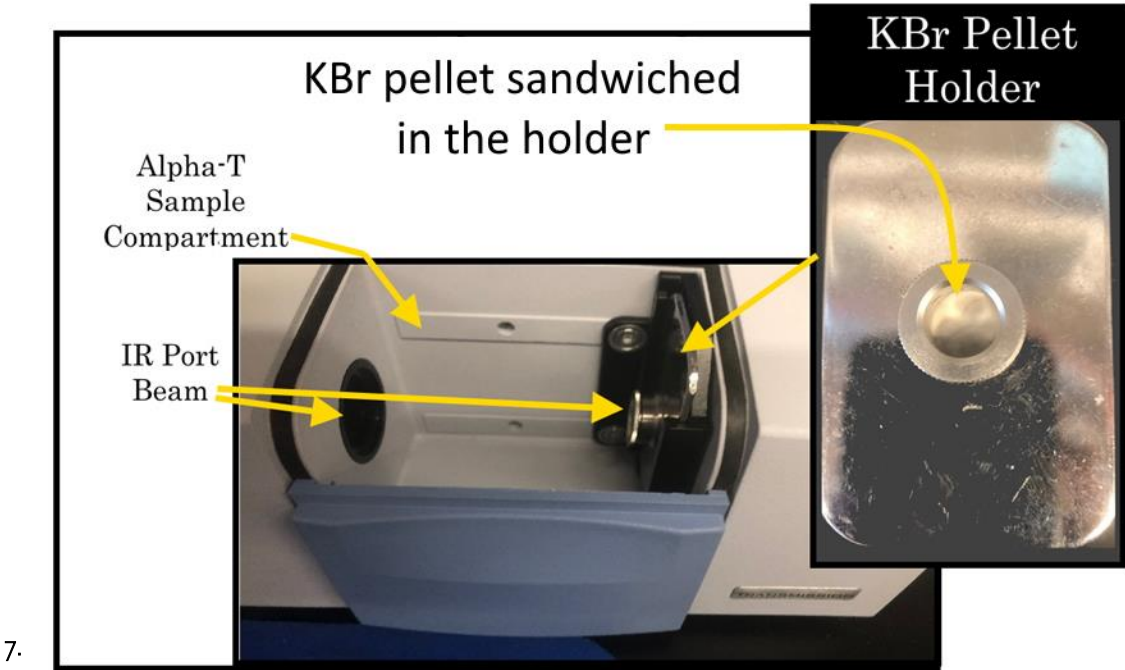
Remove the base.

Push the anvil through the die assembly till the KBr pellet is visible.

In some cases, the pellet removal may be required when the anvil or die will not move with force of hand.

↑

6.



Contact the TRACES Manager for further details.