1-Collect liquid sample in a Micro-capillary (same as TLC spotting)

2 – apply a TINY drop onto the outer edge of NaCl plate

3 – Sandwich btw the two plates to create a ultra thin smear of the sample

4 – Take the IR

- Spectra should be labeled with the cmpd name and draw the proposed structure.
- Your GSI will dictate if peaks should be labeled directly on the spectrum and/or within lab reports.

<table>
<thead>
<tr>
<th>Band Frequency (cm⁻¹)</th>
<th>Descrip.</th>
<th>Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>3435</td>
<td>N-H str. (1°)</td>
<td>12.4, s</td>
</tr>
<tr>
<td>3554</td>
<td>N-H str. (1°)</td>
<td>7.2, vs</td>
</tr>
<tr>
<td>3036</td>
<td>Ar C-H str.</td>
<td>16.1, ms</td>
</tr>
<tr>
<td>1621</td>
<td>Ar C=C str.</td>
<td>4.1, vs</td>
</tr>
<tr>
<td>etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Aniline – Liquid IR

Too much sample used.

- Too big a drop was placed on the NaCl plate.
- Peaks of strong intensity are bottomed out with loss of resolution.

Too low %T

- If too much sample is placed on the NaCl, it absorbs 100% of the IR beam and bottom out (100% absorbance >> 0% Transmittance).
- Light (IR energy) passes through the sample and is detected. IR of specific energies causes bonds within the molecule to resonant – Specific bonds stretch or bend at specific energies (cm⁻¹). Bonds of a specific functionality (carbonyl, amines, C-H, C-C, C=C) will absorb (i.e. show a peak) within a specific energy range.
- The IR is specific to each particular molecule and serves as a “fingerprint” ID for that arrangement of atoms. This can be compared with literature data.
- An IR of a solid requires the sample to be dispersed within an inert matrix. Inert means something that won't absorb a lot of the IR energy across the spectral range. KBr does not absorb much energy between 4000-500 cm\(^{-1}\).
- Add 15-20 times KBr to sample. Grind to mix. Add JUST ENOUGH of the mixture to coat the bottom of the sample press.
- The sample window should be clear and thin. The biggest issue is obtaining the proper ratio of sample to KBr (not too dilute and not too concentrated) and creating a THIN sample window. IR techs will demonstrate the proper technique.
- If only KBr was used, the %T will be close to 100 as all of the IR “light” gets through to the detector.
If not enough sample is used in the mixture with KBr, the spectrum will be TOO DILUTE. The signal to noise ratio will be too low. TOO MUCH NOISE in the spectrum. Can’t tell the sample from the baseline.

note: Two peaks at ~2300 cm\(^{-1}\) are due to \(\nu\)C=O’s of CO2 in the air.
- This spectrum is bordering on being too thick. Too much of the KBr and sample mixture was placed in the IR press.
- To make the sample window. The “star” indicates a low %T meaning a lot of the light is being scattered. This can/will lead to low resolution, broad peaks, and bottoming out.