

# PCL Separation Science Lab

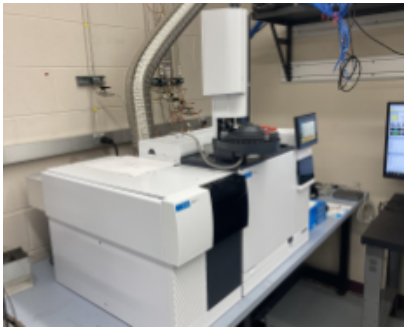
## Principle

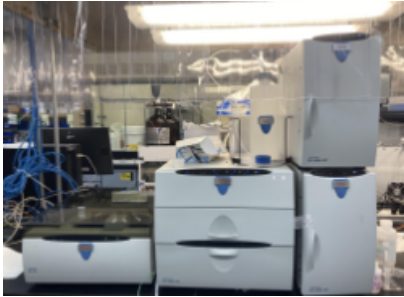
Separation Science

## Capabilities

- GC, GC-MS
- HPLC
- IC
- GPC (SEC)
- UPLC-MS TOF with ASAP
- TDGC-MS
- Preparative Chromatography

## Equipment

|                                                                                     | Equipment Type    | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | GC-MS/MS          | <p>Purity Analysis and Trace Contamination</p> <p>GC</p> <ul style="list-style-type: none"><li>• 9 dual channel GCs</li><li>• Flame Ionization Detector (FID)</li><li>• Thermal Conductivity Detector (TCD)</li><li>• Electron Capture detector (ECD)</li></ul> <p>HPLC/UHPLC</p> <ul style="list-style-type: none"><li>• 3 LC systems</li><li>• UV/Vis</li><li>• Charged Aerosol Detector (CAD)</li></ul> <p>GC-MS/MS (QQQ)</p> <ul style="list-style-type: none"><li>• ppb level detection</li></ul>                                                                                                                                                                                                                                                                                                                                                            |
|  | Headspace GC/GCMS | <p>Unknown Volatiles &amp; Decomposition</p> <p>GC-MS</p> <ul style="list-style-type: none"><li>• 3 GC-MS systems</li><li>• 2 multidetector systems (FID/MSD): simultaneous collection of FID signal and MSD signal for both qualitative and quantitative analysis</li></ul> <p>TD/Py GC-MS</p> <ul style="list-style-type: none"><li>• Product deformation</li><li>• Evolved Gas Analysis (EGA): 50°C - 1000°C</li><li>• Identification of unknown base resins</li><li>• Complimentary to TGA</li><li>• Thermal Desorption/Pyrolysis (TD/Py): 50°C - 1000°C</li><li>• Identification of off-gassing at various temperatures</li></ul> <p>Headspace GC/GCMS</p> <ul style="list-style-type: none"><li>• Analysis of volatiles in solid and liquid samples: Ambient - 300°</li><li>• FID and MSD detection for qualitative and quantitative measurements</li></ul> |

|                                                                                                                          |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | <p>Ion Chromatography</p>                                                           | <p><b>Ion Quantification</b><br/>IC</p> <ul style="list-style-type: none"> <li>Quantification of residual ionic species that are extractable into aqueous medium</li> <li>Chloride, fluoride, sulfide, acetate, methane sulfonate, etc.</li> </ul> <p>Combustion IC (CIC)</p> <ul style="list-style-type: none"> <li>Quantification of total ionic species that are generated upon combustion of polymeric material</li> <li>Typically chloride and fluoride</li> </ul> |
| <p>Multi-Detector GPC</p>  <p>HTGPC</p> | <p>HTGPC</p>                                                                        | <p><b>Molecular Weight Distribution</b></p> <p>GPC</p> <ul style="list-style-type: none"> <li>6 instruments each dedicated to a polymer type (mostly RI detection, but some UV/Vis)</li> </ul> <p>High Temp GPC (HTGPC)</p> <ul style="list-style-type: none"> <li>For chemically resistant materials</li> <li>Capable of temps from ambient up to 220°C</li> </ul>                                                                                                     |
|                                        | <p>Multi-Detector GPC</p>                                                           | <p>Multi-Detector GPC</p> <ul style="list-style-type: none"> <li>Used for non-routine analyses</li> <li>Dual angle LS, RI, and Viscometry</li> <li>Can be used for traditional GPC and also for measurement of absolute molecular weight and intrinsic viscosity to gain insight into conformational characteristics and other properties of polymers</li> </ul>                                                                                                        |
| <p>Mission</p>                                                                                                           | <p>Separation Science mission</p>                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <p>Techniques</p>                                                                                                        | <p><b>Separation Science</b></p> <ul style="list-style-type: none"> <li></li> </ul> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## Team

### Separation Science Lab

|                                                                                    | Contact                                                | Ext             | Office                              |
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