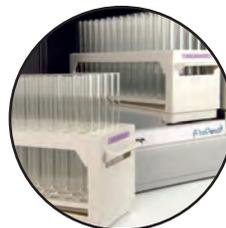




Performance



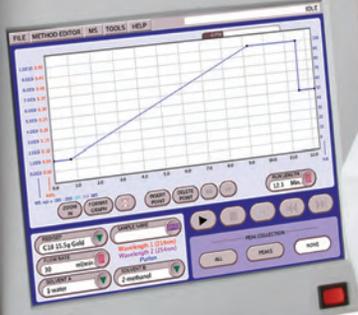
Reliability



Productivity



CombiFlash®
Automated Flash
Chromatography Systems



16 x 150mm, 18ml

CombiFlash Rf

CombiFlash® Rf+ Family of Purification Systems

Flash chromatography is the science of refinement...

Teledyne Isco continues to refine its CombiFlash Rf+ Purification systems for simplified ease of use, increased throughput, superior results and the ideal system configuration to meet the laboratories' needs. Years of experience are behind our safer, smaller, simpler, more capable and more efficient Flash chromatography instruments.

Standard features include:

- Large fraction capacity for longer runs without changing racks. Fraction capacity is virtually unlimited with rack changes.
- Radio Frequency Identification (RFID) technology reduces setup time and the potential for errors as well as rack verification so tubes are not missed or overfilled.
- Built-in method-scaling adjusts simply from milligram to multi-gram purifications.
- Safety features exceed regulatory requirements for CE and CSA.
- Vapor and over-pressure sensors for vigilant safety monitoring.
- Active level sensing eliminates lost runs due to lack of adequate eluting solvent and waste overflow.
- Air purge dries columns for easy disposal.

Develop a purification method to produce a desired result...

The CombiFlash Rf+ family centers around the flexibility to satisfy the wide variety of needs in Flash chromatography. Furthermore, the family offers specialized configurations to perform these purification tasks at a superior level.

- Versatile enough for both discovery and development-scale purification of organic compounds.
- Capable enough to scale-up purification for drug discovery, agrochemicals, petrochemicals, natural products, polymers and catalysts from milligram to multi-gram samples.

The best possible purification for your specific sample mixture...

Each member of the CombiFlash Rf family is specifically engineered to meet your unique needs. What do you need to achieve - increased throughput, exceptional ease of use, the necessary flexibility of scale and separation methods? The CombiFlash system adapts to a variety of workload, detection, and automation needs.

Advance your lab's capabilities by selecting the right CombiFlash Rf system for your purification needs.

Making Flash Chromatography Intuitive

While flexibility is at the heart of the CombiFlash Rf family, what is common to all CombiFlash Rf models is our simple, straight forward PeakTrak software:

There is no longer a need to build methods where all operating parameters must be detailed before any purification can be run. PeakTrak gets you started with one simple button push.

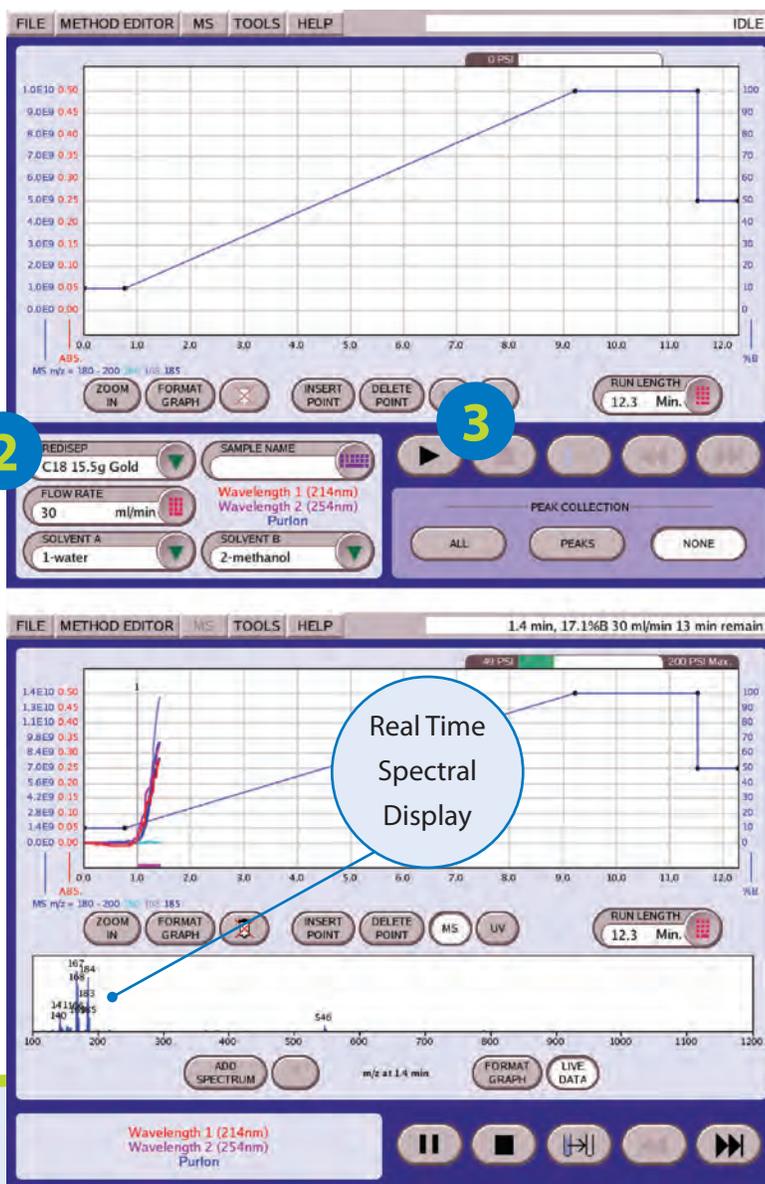
To get started, is as simple as 1,2,3...

- 1 Prepare your sample
- 2 Install a column. The system automatically loads the method.
- 3 Press Play

Once the purification run starts, all of the run data is at your fingertips - even the spectral data. Intelligently designed software like PeakTrak is what makes Teledyne Isco's CombiFlash Systems the world's most popular family of automated Flash chromatography systems.

Don't want to be tied to the lab?

PeakTrak network software supports common protocols, providing you remote monitoring and control of purifications.



- Intuitive Touch Screen Display for instrument use and programming
- Immediate access to all of the information you need quickly and efficiently
- Real-time method control and editing
- Click and drag gradients

CombiFlash® Rf⁺ Purlon:

Making Flash Chromatography Selective

CombiFlash® Rf⁺ Purlon takes the guesswork out of your purification routine with mass directed purification. Simply program the Flash system to collect only those peaks matching the mass of your target compound. This eliminates the need for further analysis and saves time in post-purification processing.

Key features include:

- Real-time and post-run mass spectral data display.
- Robust quadrupole technology.
- Quickly switch between the standard ESI probe to APCI for difficult to ionize compounds.
- Simplified user interface – no MS expertise required.
- A quick self-cleaning function reduces or eliminates maintenance needs.
- Select Terminate after Target to save time and solvent.



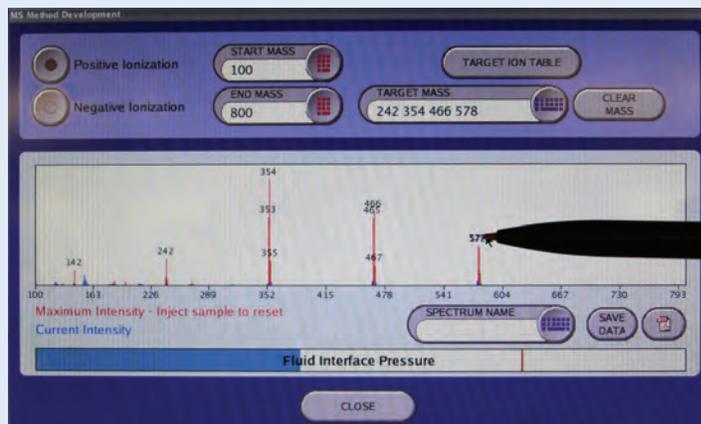
CombiFlash® Rf⁺ PurIon

Verify Before You Purify

The method development screen allows you to quickly identify the detectable ions in your sample.

The Purlon L mass spectrometer has a mass range from 50 to 2000 Dalton with 1 Dalton resolution. The system autoswitches between positive and negative modes with sample introduction via either electrospray ionization (ESI) or atmospheric pressure chemical ionization (APCI) probes. Preset mass spectrometer operating parameters simplify system operation or adjust parameters to optimize ionization conditions.

The CombiFlash system lets you fractionate up to four specific targeted masses or a mass range and three target masses. Use the mass spectrometer with either a UV or UV-Vis detector and the Evaporative Light Scattering Detector to gain maximum control of your compound purification.



CombiFlash® Rf⁺ Lumen:

Making Flash Chromatography Universal



Integration of an Evaporative Light Scattering Detector (ELSD) allows detection of compounds with minimal UV absorption such as carbohydrates, steroids, and lipids.

The CombiFlash® Rf⁺ Lumen combines ELSD with either UV or UV-Vis detection to deliver the widest compound detection range in the industry.

Key features include:

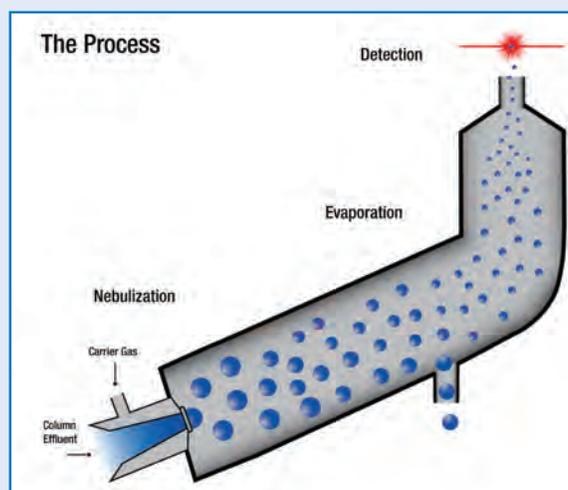
- Conserve valuable hood space - the CombiFlash Rf⁺ Lumen has an integrated ELSD.
- ELSD operating parameters are automatically adjusted to optimize detection based on purification solvents in use.
- Detect light sensitive compounds by turning off the UV lamp.

CombiFlash® Rf⁺ Lumen™

ELSD Function

The ELSD withdraws a miniscule portion of the liquid eluting from the chromatographic column into the detector module. This fluid is nebulized using a stream of inert gas and forms an aerosol cloud of solvent droplets containing your compound. The aerosol cloud is evaporated, leaving micro-particles of compound.

The gas stream carries these micro-particles to the detector where a laser light illuminates the gas stream. When a compound is present, the particles cause the laser light to scatter creating a detector signal. This signal triggers collection of your compound.



CombiFlash® Rf+:

Making Flash Chromatography Easy

The CombiFlash® Rf+ increases productivity whether you're purifying synthetic compounds, natural products, peptides, or polymers. The system is compatible with both normal and reversed phase conditions to meet all your purification needs. With flow rates up to 200 mL/min at pressures of 200 psi (13.8 bar), the CombiFlash Rf+ is capable of purifications requiring columns up to 330 g in size.



With the smallest footprint of any automated Flash chromatography system, the CombiFlash Rf+ saves valuable bench or hood space. This network-compatible system saves you time by allowing remote monitoring and control of the purification progress from your desk.

Other features include:

- RFID on columns and racks eliminates errors, tracks column usage, and identifies rack contents.
- Easy automatic method scaling up to 330 g columns eliminates the need to redevelop methods.
- Four solvent flexibility – run binary gradients from any two of four solvents, add a third solvent as a modifier.
- An automated injection valve lets you load samples and walk away.
- Gradient Optimizer - determines optimal separation parameters while minimizing run time and solvent usage.
- View UV spectra in real time – monitor the spectra to allow compound confirmation.
- Active solvent and waste level sensing eliminates mobile phase shortages and chemical spills.
- Purity Indicator – identifies co-eluting impurities under peaks of interest.

CombiFlash® Rf+

Making Flash Chromatography Upgradeable

CombiFlash Rf+ can grow as your needs change. Quickly add a Purlon module to any MS-ready system. Should your detection needs suddenly require ELSD, any CombiFlash Rf+ is field upgradeable to a CombiFlash Rf+ Lumen™ system. Or, add the 4x module for even greater unattended productivity.

CombiFlash® Rf 150:

Making Flash Chromatography Economical

The CombiFlash® Rf 150 delivers normal or reversed phase purifications at a fraction of the cost of preparative HPLC. The system operates at pressures up to 150 psi (10.3 bar). The rugged construction makes this unit a daily workhorse for your demanding schedule.

Beginning users will be up and running in a matter of minutes with our intuitive PeakTrak user interface. Don't waste valuable time learning complex software when it could be better spent purifying samples.

The system accepts a variety of rack sizes so that purified compounds can be collected in volumes appropriate for the column size being used.

Like other models in the CombiFlash family, the CombiFlash Rf 150 features:

- Real-time method editing and control.
- Touch-and-drag gradients.
- Gradient optimization.
- Flow rates for fast purifications – 100 mL/minute.
- Real-time spectral display.
- Variable wavelength UV detector (UV-Vis optional).
- Column sizes from 4 to 330 grams.

CombiFlash® Rf 150



CombiFlash Torrent[®]:

Making Flash Chromatography Productive

Get the ease of use and reliability provided by CombiFlash Rf+ systems and RediSep columns for development scale purification with the CombiFlash Torrent[®] purification system. The system is designed to adapt to a variety of large-scale purification needs.

The CombiFlash Torrent offers flexible sample introduction and Fraction collection options:

- Choose between Solid Load Cartridges or liquid loading to introduce samples onto column.
- Liquid loading can be either manual or via a sample load pump.
- Fraction collection options include a 6-port fraction valve to collect large volumes or collection into up to four Foxy R2 high flow fraction collectors.
- The flow path is fully grounded to prevent static buildup.
- Active solvent and waste level sensing technology eliminates chemical spills and mobile phase shortages.

CombiFlash
Torrent[®]



For complete details, download our CombiFlash Torrent brochure located on our website www.isco.com

RediSep® Rf and RediSep Rf Gold®:

Making Flash Chromatography Work

Teledyne Isco offers two lines of Flash Chromatography columns. Both RediSep® Rf and RediSep Rf Gold® offer the following advantages:

- High flow rates for fast purification of target compounds.
- Reliable, consistent performance from automated precision packing.
- Column sizes available for purifying milligrams to hundreds of grams.
- RFID technology for automatic set up on compatible instruments (except 4 g silica and 8 g alumina).
- Fits all Isco CombiFlash automated organic purification instruments (fits other systems using adapters).
- Long shelf life in airtight, re-sealable packages.
- Available in bulk discounted quantities.
- Luer lock inlet end fittings.

RediSep Rf Gold - High-performance spherical media for sharper peaks and faster purifications

When more resolution is needed for those difficult separations, chemists choose our RediSep Rf Gold columns to take advantage of the benefits of this patented silica media.

Advantages include:

- Outstanding resolution to purify closely eluting compounds and isomers.
- Faster purification runs saving time and solvent.
- More concentrated fractions, reducing post-run solvent evaporation time.
- Lower back pressures than competing columns.

RediSep Rf Gold columns are available in several reusable phases such as:

- C18
- C18Aq - for high aqueous separations (>50%)
- Amine
- Cyano
- Diol

RediSep Rf - High resolution and reproducibility for your normal-phase separations

RediSep Rf disposable columns for Flash purification of organic compounds are simply the most economical silica gel columns you can buy. Compare them to other brands and see the high resolution and reproducible results possible for normal phase separations.

In addition to silica, RediSep Rf columns are available in several alternative phases such as:

- C18
- Alumina – Basic, Neutral, Acidic
- SAX
- SCX

For a complete listing of column options, check out our RediSep Rf Consumables brochure located on our website www.isco.com



Choose the CombiFlash® System that Meets Your Needs

	CombiFlash Torrent	CombiFlash Rf 150	CombiFlash Rf+	CombiFlash Rf+ Lumen	CombiFlash Rf+ Purlon
					
Flow Range	50 mL - 1 L/min	10 – 100 mL/min	1 – 200 mL/min	1 – 200 mL/min	1 – 200 mL/min
Maximum Pressure	100 psi, 6.9 bar	150 psi, 10.3 bar	200 psi, 13.8 bar	200 psi, 13.8 bar	200 psi, 13.8 bar
Add On 4X Module	N/A	N/A	68-5230-007	68-5230-007	68-5230-007
Sample Sizes	1 - 300 g	4 mg – 33 g	4 mg – 33 g	4 mg – 33 g	4 mg – 33 g
Column Sizes	80 g up to 3 kg	4 g – 330 g, up to 3 kg with adapters	4 g – 330 g, up to 3 kg with adapters	4 g – 330 g, up to 3 kg with adapters	4 g – 330 g, up to 3 kg with adapters
Gradient Optimization Software	Standard	Standard	Standard	Standard	Standard
RediSep Rf Column Detection	Automatic	None	Automatic	Automatic	Automatic
Pumping System	Dual piston pumps with active valve	Ceramic single piston with active valve	Dual syringe pumps	Dual syringe pumps	Dual syringe pumps
Detection	Variable UV std, UV-Vis optional	Variable UV std, UV-Vis optional	Variable UV std, UV-Vis optional	ELSD, Variable UV std, UV-Vis optional	Mass Spectrometer, Variable UV std, UV-Vis and ELSD optional
Spectral Display	UV or UV-Vis	UV or UV-Vis	UV or UV-Vis	UV or UV-Vis	Mass and UV or UV-Vis
External Detector Input	Standard through Fraction Collector	None	Standard	Standard	Standard
Programmable Gradients	Linear, Step, Isocratic	Linear, Step, Isocratic	Linear, Step, Isocratic	Linear, Step, Isocratic	Linear, Step, Isocratic
Gradients	Two solvent, binary	Two solvent, binary	Four solvent binary with isocratic third solvent as a modifier	Four solvent binary with isocratic third solvent as a modifier	Four solvent binary with isocratic third solvent as a modifier
Sample Injections	Multiple Options	Manual Load	Automated, self-cleaning injection valve	Automated, self-cleaning injection valve	Automated, self-cleaning injection valve
Controller	10.4" (26.4 cm) touchscreen	10.4" (26.4 cm) touchscreen			
Dimensions (W x D x H)	18.5 x 17.9 x 28.1 in., 47 x 43.5 x 71.4 cm	14.1 x 17 x 24 in., 35.8 x 43.2 x 61.0 cm	14.1 x 17 x 24 in., 35.8 x 43.2 x 61.0 cm	14.1 x 17 x 24 in., 35.8 x 43.2 x 61.0 cm	14.1 x 17 x 24 in., 35.8 x 43.2 x 61.0 cm (excluding MS)
Ionization Probe Options	N/A	N/A	N/A	N/A	ESI or APCI
Mass Range*	N/A	N/A	N/A	N/A	50 - 1200 Dalton Purlon + Purlon S *50 - 2000 Dalton Purlon L

*Teledyne Isco reserves the right to improve products and change specifications at any time.

Ordering Information

System Description ³	Part Number	Detector Options				Processor Options	Rf 4X
		UV ¹	UV-Vis ²	ELSD	MS	MS Ready	Compatible
CombiFlash Rf 150	68-5230-014	x					No
	68-5230-015		x				No
CombiFlash Torrent	68-5240-003	x		Optional			No
	68-5240-004		x	Optional			No
CombiFlash Rf+	68-5230-021	x				No	Yes
	68-5230-022		x			No	Yes
	68-5230-031	x				Yes	Yes
	68-5230-032		x			Yes	Yes
CombiFlash Rf+ Lumen	68-5230-023	x		x		No	Yes
	68-5230-024		x	x		No	Yes
	68-5230-033	x		x		Yes	Yes
	685230-034		x	x		Yes	Yes
CombiFlash Rf+ Purlon (1200 Da)	68-5230-041	x			x	Yes	Yes
	68-5230-042		x		x	Yes	Yes
	68-5230-043	x		x	x	Yes	Yes
	68-5230-044		x	x	x	Yes	Yes
CombiFlash Rf+ Purlon S (1200 Da, Polarity Autoswitch)	68-5230-045	x			x	Yes	Yes
	68-5230-046		x		x	Yes	Yes
	68-5230-047	x		x	x	Yes	Yes
	68-5230-048		x	x	x	Yes	Yes
CombiFlash Rf+ Purlon L (2000 Da, Polarity Autoswitch)	68-5230-049	x			x	Yes	Yes
	68-5230-050		x		x	Yes	Yes
	68-5230-051	x		x	x	Yes	Yes
	68-5230-052		x	x	x	Yes	Yes

¹ - Wavelength user selectable from 200 - 400 nm

² - Wavelength user selectable from 200 - 800 nm

³ - Standard options include one set of two collection racks and a 25 g Adjustable Solid Load Cartridge Cap (not applicable to Torrent)

For more information about capabilities and benefits of the CombiFlash Instruments, visit our website at www.isco.com.

Be sure to download other brochures and application notes made available on our website.

CombiFlash Rf 4x

Add the 4X module to the CombiFlash Rf+, CombiFlash Rf+ Lumen, or the CombiFlash Rf+ Purlon and get four times the throughput. The CombiFlash Rf 4x module adds three additional channels to the CombiFlash system resulting in a four-sample, full-featured, automated version of the innovative CombiFlash Rf personal purification system. The built-in control software allows each channel to have its own purification conditions.



Options

CombiFlash Rf 4x Module	
CombiFlash Rf 4x Module for CombiFlash Rf 200, Rf 200i, Rf+, Rf+ Lumen, and Rf+ Purlon systems.	68-5237-046
CombiFlash Rf Upgrades	
Mass Spectrometry Options	
CombiFlash Purlon Mass Spectrometer and Fluid Interface. This option upgrades a CombiFlash Rf+ system (P/N 68-5230-031 and 68-5230-032) to a CombiFlash Rf+ Purlon Automated Flash Chromatography/Mass Spectrometry System. It also upgrades CombiFlash Rf+ Lumen systems (P/N 68-5230-033 and 68-5230-034).	68-5237-050
CombiFlash Purlon Mass Spectrometer, Fluid Interface, and upgraded motherboard assembly. This option upgrades CombiFlash Rf+ systems (P/N 68-5230-021 and 68-5230-022) to a CombiFlash Rf+ Purlon Automated Flash Chromatography/Mass Spectrometry System. It also upgrades CombiFlash Rf+ Lumen systems (P/N 68-5230-023 and 68-5230-024). This option can also add mass spectrometry capabilities to CombiFlash Rf 200 and CombiFlash Rf 200i systems.	68-5237-051
Fluid Interface. This option allows the user to interface a third party mass spectrometer to any Teledyne Isco CombiFlash Rf+ system. Mass spectrometer parameters are not controlled via PeakTrak. Mass spectrometer must be capable of sending an analog signal out to the external detector port on the CombiFlash Rf+.	68-5237-081
Integrated ELSD Upgrade Option	
Rf 200i Field Conversion Kit. Any Rf 200 manufactured with a serial number greater than 212G20013 can be retrofitted with this module. Any CombiFlash Rf+ can be retrofitted to add an integrated ELSD.	60-5237-077
CombiFlash Rf System Accessories	
CombiFlash Rf Racks and Bottles	
CombiFlash Rf racks, 13 x 100 mm, qty 2 (108 tubes/rack)	60-5237-013
CombiFlash Rf racks, 16 x 100 mm, qty 2 (75 tubes/rack)	60-5237-061
CombiFlash Rf racks, 16 x 125 mm, qty 2 (75 tubes/rack)	60-5237-031
CombiFlash Rf racks, 16 x 150/160 mm, qty 2 (75 tubes/rack)	60-5237-032
CombiFlash Rf racks, 18 x 150 mm, qty 2 (70 tubes/rack)	60-5237-033
CombiFlash Rf racks, 18 x 180 mm, qty 2 (70 tubes/rack)	60-5237-034
CombiFlash Rf racks, 25 x 150 mm, qty 2 (30 tubes/rack)	60-5237-035
CombiFlash Rf rack, 480 mL French square bottle, qty 1 rack for 12 bottles.	60-5237-040
CombiFlash Rf racks, 28 x 61 mm (20 mL scintillation vials), qty. 2. (27 vials per rack)	60-5394-469
CombiFlash Rf racks, 28 x 95 mm (40 mL scintillation vials), qty. 2. (27 vials per rack)	60-5394-468
Collection bottles, glass, 480 mL, case of 40	60-2137-062
CombiFlash Rf Sample Loading Options	
Adjustable Solid Load Cartridge Cap (SLCC 5 g). Includes one loading rod.	60-5237-047
Adjustable Solid Load Cartridge Cap (SLCC 25 g). Includes one loading rod.	60-5237-048

Industries/Applications:

- **Pharmaceutical** – small molecule drug development
- **Agrochemical** – pesticide and herbicide design
- **Dyes** – biological and colorants
- **Polymer** – purification of monomers and catalysts prior to polymerization
- **Natural Products** – extraction and purification of plant material





