



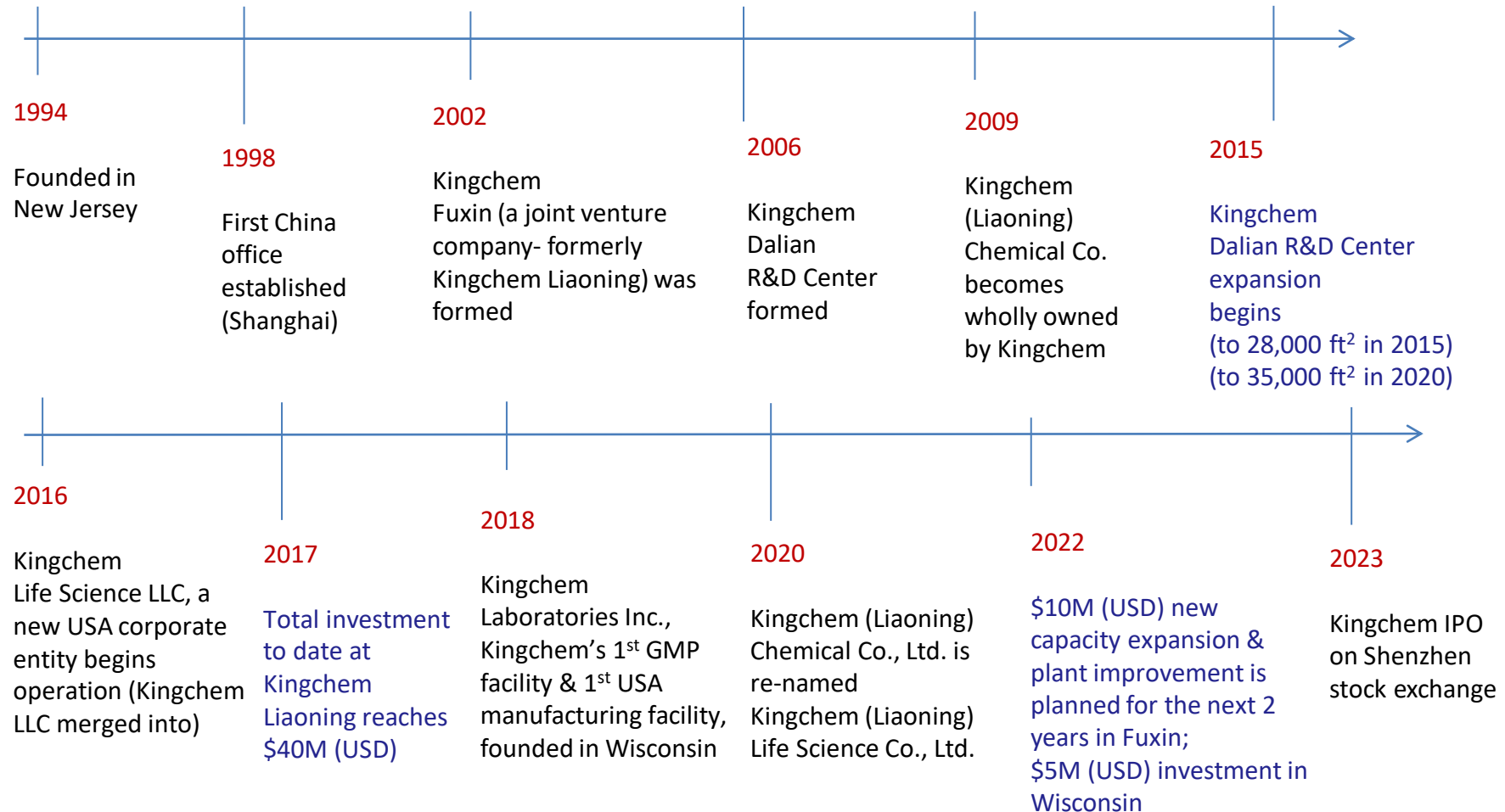
SOCMA
February 2024

Booth # 317

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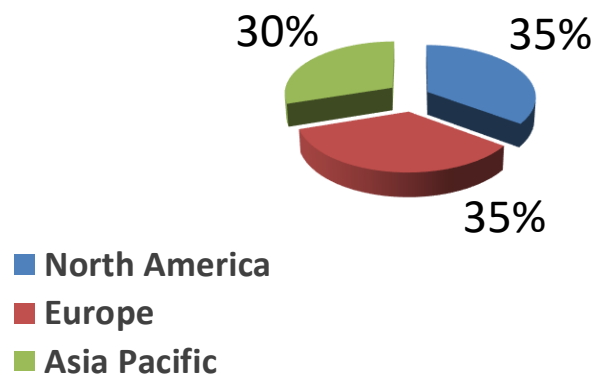
Our History

■ Milestones
■ Investments

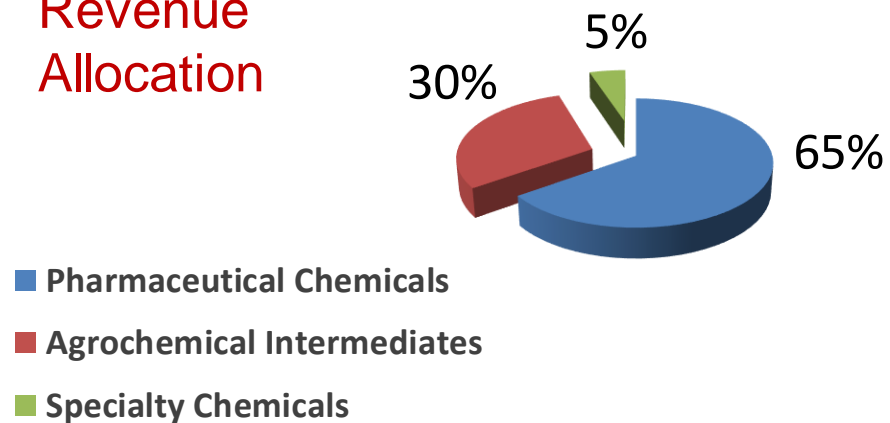


Business Breakdown

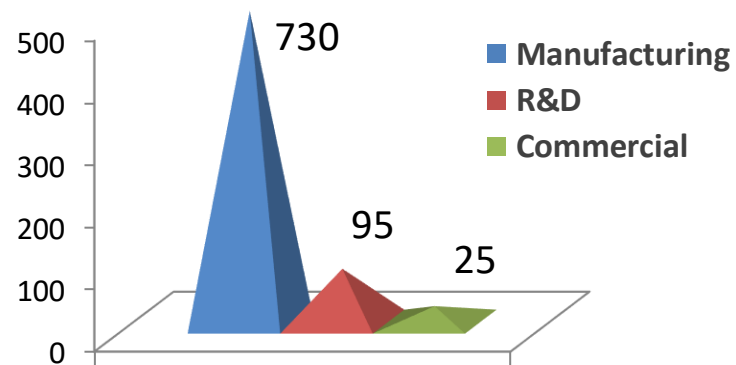
Markets



Revenue Allocation



Global Employees: 850



Locations Worldwide



Kingchem Laboratories, Inc.

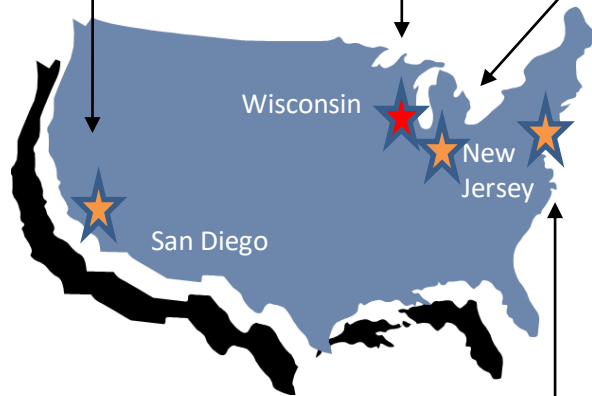
St. Francis Wisconsin

Production, R&D

GMP Intermediates,
APIs, Excipients

Kingchem
California
**Business
Development**

Kingchem
Indiana
**Business
Development**



Kingchem Frankfurt
Business Development



Kingchem (Liaoning) Life Science Co., Ltd.

Fuxin, Liaoning Province China

Production, R&D

RSMs, Early Intermediates,
Building Blocks

Kingchem
Dalian
R&D Center
Dalian, China
R&D



Kingchem
Dalian
**Business
Development**

All Phases of Development



R&D

Process Development
From grams to 1 kg
Dalian, Fuxin, Wisconsin



Kilo

Process Optimization
From 1 kg to 10 kg
Dalian, Fuxin, Wisconsin



Pilot

Initial Commercialization
From 10 kg to 1000 kg
Fuxin and Wisconsin



Full

Full Commercial Scale
From 1 MT to >1000 MT
Fuxin and Wisconsin

Kingchem offers reliable fully-integrated CMO services at all scales

Fuxin Plant



Facts

- Total mfr. capacity: 1,194 M³
- Temperature range: -100° C ~ 300° C
- Vacuum: 2-5 mm Hg (Production)
- Pressure: Max. 10 MPa (Fluorination)
Max. 4 MPa (Hydrogenation)

Reactors

- Pilot plant: 50-3,000 L
- Production: 2,000-10,000 L
- Distillation: 300-12,000 L

Land & Buildings

- Total Staff: 700 +
- Site area: 160,000 m²
- Building area: 57,000 m²

Site Certifications

- ISO9001: 2015 Certificate of Quality Management
- ISO14001: 2015 Environmental Management Certificate
- ISO45001: 2018 Health and Safety Management System

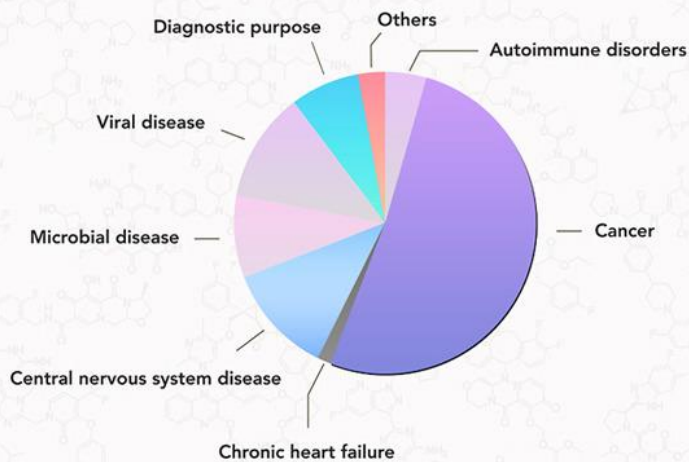
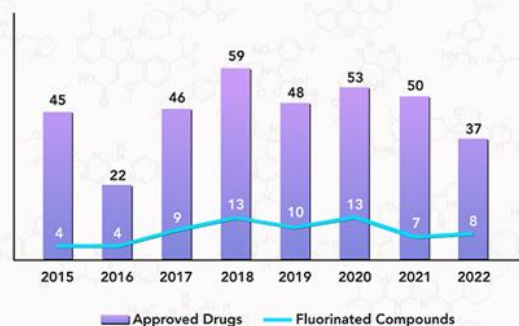
Production Capabilities: Chemistries

Specializing in

- Cryogenic Reaction/Organolithium Chemistry
- Fluorination
- Grignard Reaction
- Halogenation
- Hofmann Rearrangement
- Hydrogenation
- Phosgenation
- Suzuki Reaction
- Skraup Quinoline Synthesis
- Van Leusen Reaction



Specialty Capability, Fluorination



Fluorination is Kingchem's core competence

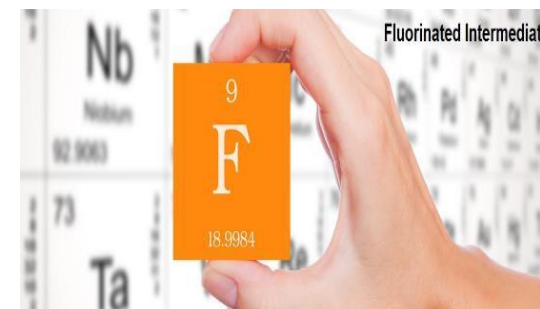
- Approximately 20% of pharmaceuticals and 50% of agrochemicals marketed are fluorinated compounds.
- 2021 – 7/50 approved drugs are fluorinated compounds
- 2022 – 8/37 approved drugs are fluorinated compounds

Fluorination

Nucleophilic

Electrophilic

Electrolysis



Kingchem Liaoning Life Science

Chemistry Capabilities

- Acetoacetylation
- Acylation
- Alkylation
- Aminoalkylation
- Boronic chemistry
- Chiral synthesis
- Cryogenic reaction
- Diazotization
- Dieckmann reaction
- Etherification
- Esterification
- Freidel-Crafts reaction
- Grignard reaction
- Heck Reaction
- Halogenation (additional)
- Halomethylation
- Hofmann rearrangement
- Hydrazine chemistry
- Michael addition
- Nitration
- Organolithium chemistry
- Oxidation
- Phosgenation
- Sulfonation
- Suzuki coupling
- Ullmann reaction

Production Site



Land & Buildings

- Total Staff: 30 +
- Site area: 2 acres
- Building area: 33,000 ft²

Reactors

- Prod Scale: grams to MTs
- Production: 200-6,000 L
- Distillation: 20-800 L

Facts

- Total mfr. capacity: 4200 gal (~16 m³)
- Temperature range: -75° C ~ 250 °C
- Vacuum: <1 mmHg (Distillation)
- Pressure: Max. 90 psi

Production Site Certifications

- Drug Establishment Registration – FDA (DUNS: 06-194-7683, FEI: 0002129414)
- State of WI, Dept Safety and Prof Services – Pharmaceutical Manufacture
- Food Processing Plant (Facility Identifier: 12671692120)
- FSSC 22000 Certification (SGS Group)
- Kosher Certification (Chicago Rabbinical Council)
- Halal Facility Certification (Islamic Services of America)

Our Strengths

Why Kingchem?

- Over 25 years proven track record serving global pharmaceutical & chemical industries
- R&D and manufacturing capabilities in China & U.S.A
- Vertical integration and support through all phases and scales of product development
- Innovative and cost-effective application of technology to solve manufacturing challenges
- Integrity: Respect for customer IP, with dedicated IP controls
- Western management and Eastern operational costs for most products
- Well-established systems and logistical operations
- Effective environmental, health & safety (EHS) compliance
- R&D capabilities:
 - ✓ Research & Kilo Labs
 - ✓ Process Development & Optimization
 - ✓ Custom Synthesis
 - ✓ Full In-House Analytic Capability
 - ✓ Contract R&D
 - ✓ Project Management

Additional Information

- New Product Development
- Analytical Services
- Kilo and Pilot Plant
- Production Facilities
- Reaction Chemistry and Expertise

Experienced R&D Team

Personnel

Our global team of research chemists and engineers hold educational credentials from Bachelors through Masters and PhD.

Our team excels at synthesizing complex small-molecules and developing commercial processes to be run at Kingchem's manufacturing facilities in China and in the US.



Facilities

Kingchem has R&D labs at each of our manufacturing sites in Fuxin, China and Wisconsin, USA in addition to our R&D Headquarters located in Dalian, China.

The state-of-the-art Dalian R&D facility was established in 2006 and was expanded and remodeled in 2015 (to 28,000 ft²) and again in 2020 (to 35,000 ft²).



R&D Capabilities

Kingchem

R&D Facts



Kingchem

Technology Center

(Fuxin)

- New \$2.5 million Facility
- 2200m² (~23,680ft²)
- QC Lab
- QA labs
- 4 R&D labs
- 2 Kilo labs
- Reversed QC lab for GMP analysis.

- Expands plant analytical capabilities, e.g., elemental analysis of ICP-OES Agilent 5800, UPLC Agilent 1290, NMR analysis, and different levels of scaled-up production capabilities.



Kingchem Technology Center / Fuxin, China



Kingchem R&D Center / Dalian, China

- 107 Research hoods
- 37 Walk-in hoods
- 2x Kilo lab facilities
- SF₄ chemistry lab
- 20-, 50- & 100-liter reactors
- Vacuum filtration
- Thin-film evaporator
- Buchi rotary evaporator
- Fractional & vacuum distillation
- Column purification
- EasyMax RSD (Thermal Hazard Technology)

Analytical Capabilities



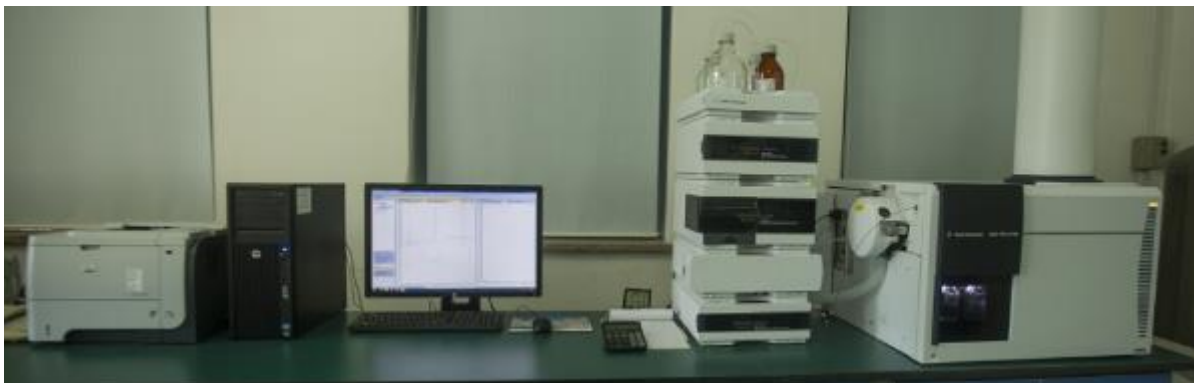
All instrumentation is regularly calibrated by original equipment manufacturers.



Analytical Instrumentation

- Agilent GC
 - Agilent GC-HS7697A
 - Agilent GC-MS
 - Agilent HPLC
 - Agilent ICP-OES
 - Agilent LC-MS
 - Bruker NMR (400 MHz)
 - Merck water purification system
 - Mettler Toledo K-F Titrator
 - Mettler Toledo Potentiometric Titration
 - Stability Testing Capability
 - IR (Shimadzu)
 - DSC
 - NMR (400 MHz)
 - Thermo Scientific Charged Aerosol Detection for Liquid Chromatography
- ✓ State of the art charged aerosol detection technology can be used with the most up-to-date liquid chromatography instrumentation to measure analytes that cannot be seen by UV and may not be readily detected with other detection techniques, including molecules without chromophores.

Analytical Capabilities



Agilent 6230 TOF LC/MS



Agilent 5975C MSD (Left-side)
Agilent 7890A GC (Right-side)



Thermo Scientific ultimate 3000
HPLC-CAD

Analytical Capabilities

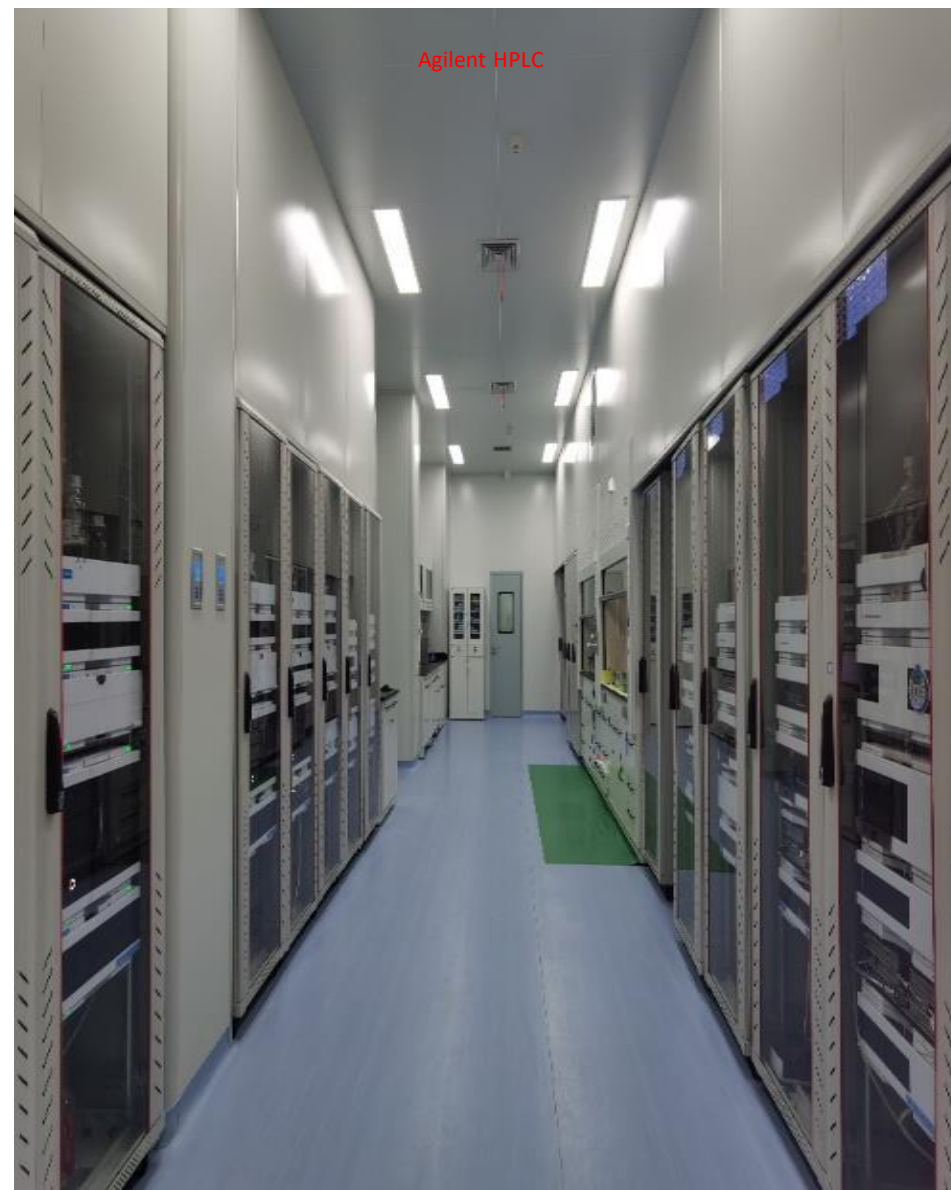
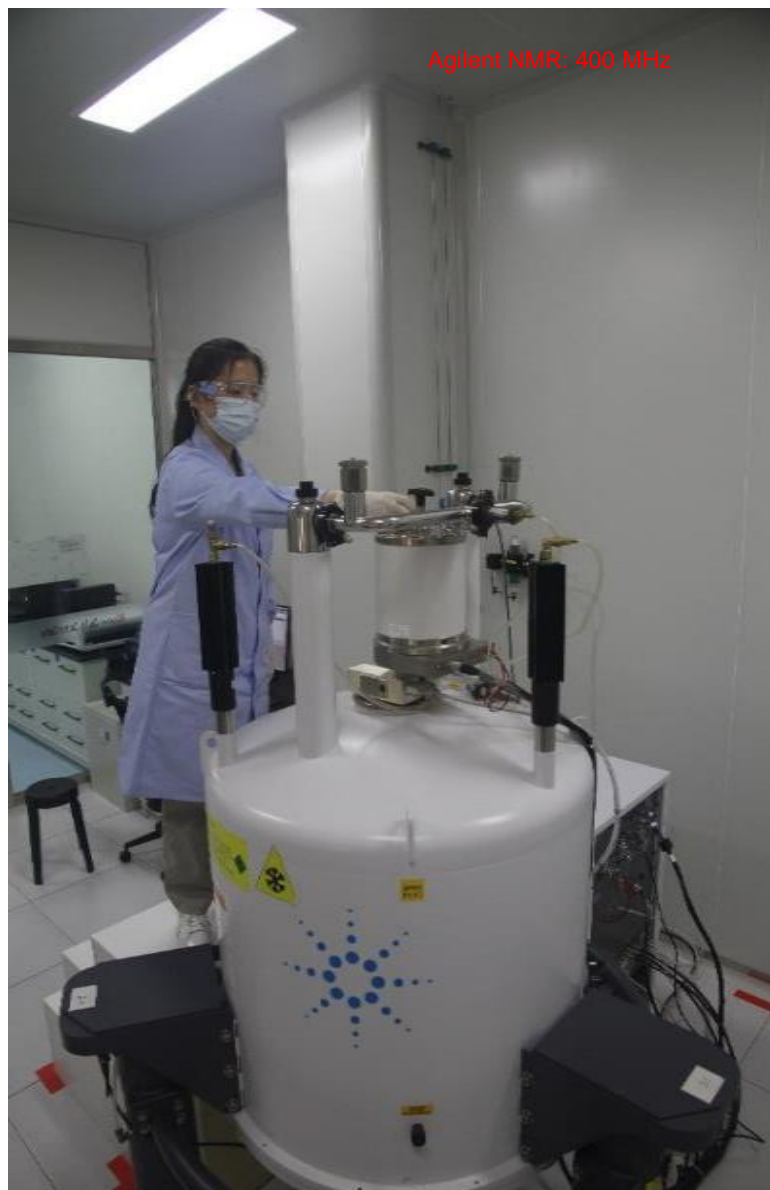


Instruments	Dalian	Fuxin	Wisconsin
GC	7	19	5
HPLC	14	14	8
GC-MS	1	1	1
ICP-OES	0	1	0
LC-MS	2	0	1
NMR	1	1	3
UV/VIS	1	1	1



Bruker ultrashield 400 plus

Analytical Capabilities, Fuxin



Analytical Capabilities, Fuxin



ICP-OES, Agilent 5800



Agilent GC-HS



Agilent GC

Kilo-Lab in Dalian

- 20-50 L glass reactors temp. range -78 to 200°C
- 1-5 L pressure reactors with up to 10 MPa
- Thin-film evaporator
- Büchi rotary evaporator
- Fractional & vacuum distillation capability
- Silica gel column purification capability



From R&D to Production

- Project transfer meeting between Dalian & Fuxin
- Demo batch in Fuxin lab by R&D technician
- Further optimization and scale-up at kilo lab in Fuxin site
- Full technical support during production by R&D technician
- Team training and troubleshooting



Fuxin
Kilo-lab



Kilo-Lab in Fuxin



20 L Glass Reactor



Thin Film Evaporator



50 L Glass Reactor



100 L Glass Reactor

Flow Chemistry: A Brief Introduction

Flow Chemistry Benefits Include:

- Cleaner
- Smarter
- More efficient
- Reduced reaction times
- Reduced plant space
- Less energy cost
- More efficient processes
- Reduced waste
- Safer overall



Continuous Flow Lab in Dalian

Kingchem's R&D Center Flow Chemistry Lab Facts:

- Set up in August 2020.
 - Operated by a dedicated, experienced group.
 - Lab equipment includes:
 - Two microreactors (Hastelloy and silicon carbide)
 - Two fixed-bed reactors
 - One automatic hydrogenation reactor.
-
- ✓ These devices can carry out many types of chemical reactions.
 - ✓ The process of continuous nitration, hydrogenation, oxidation by air, and ortho-claisen thermal rearrangement are well developed.
 - ✓ In the future, further flow-chemistry process will be developed to meet customer requirements.

Continuous Flow Lab (Dalian)

Fixed-bed Reactor



Manufacturer: Dalian Senjietec Co.

Equipment parameters:

- Two Gas Input
- One Liquid Input
- Reactor Size: Diameter 10mm, length 400mm
- Temperature: RT to 400°C
- Pressure: 0-6MPa
- Gas Feeding Rate: Max 200ml/min
- Liquid Feeding Rate: Max 50ml/min

(Application: Hydrogenation, Oxidation, Amination)

Micro Reactor-SiC



Model:	RMCS181003 CS2
Structure of material:	SiC
Reactor volume for single slice:	8.7ml
Reaction pressure:	0 ~ 1.8Mpa
Reaction temperature:	-25 ~ 200°C
Total reaction slice:	5

Continuous Flow Lab (Dalian)

Automatic Hydrogenation Reactor



Manufacturer: Ou Shi Sheng (Beijing) Technology Co., Ltd.

Model:	H-Flow-S10
Structure of Material:	316L
Reactor Volume:	5.6ml
Catalyst Particle Size:	0.2-2mm
Reaction Pressure:	<10Mpa
Reaction Temperature:	Room temperature ~200°C
Preheater Temperature:	Room temperature ~200°C
Liquid Feed Flow Rate:	0.1~10ml/min
Liquid Feed Accuracy:	±1%FS
Tracing Temperature Of Liquid Circuit:	Room temperature ~200°C
Hydrogen Feed Flow Rate:	5~100sccm
Nitrogen Feed Flow Rate:	5~100sccm
Dimension (d * w * h)mm:	570*430*625

Micro Reactor-Hastelloy



Manufacturer: Shandong Himile Group

Model:	RMHS2020 HS2
Structure of Material:	Hastelloy
Reactor Volume for Single Slice:	8.8ml
Reaction Pressure:	0 ~ 5.5Mpa
reaction Temperature:	-25 ~ 200°C
Total Reaction Slice:	5

Workshop K201 Multipurpose

2,000 to 5,000 liter, 70M³

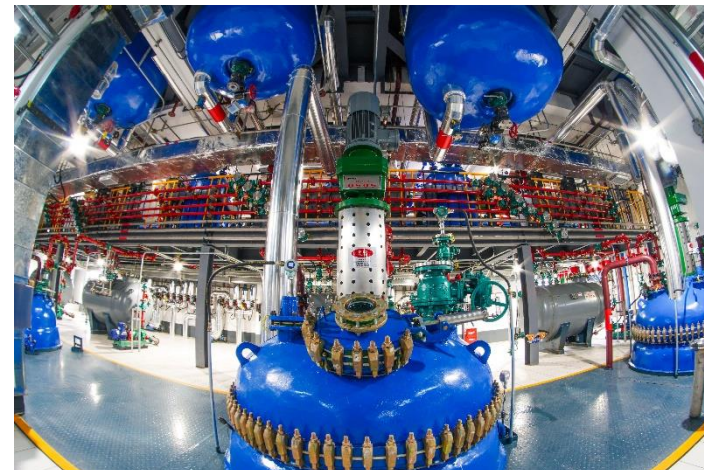


Synthesis Area IPCs

- Real-time monitoring of temperature and pressure
- Real-time monitoring excessive temperature
- Real time pH changing/adjusting system
- Over limit alarm system
- Pressure safety valve systems
- Flammable gas and smoke detection systems



Production Site –K301



K301, Agitated filter drier 2.5 m²



Workshop K201 Multipurpose



Isolation Area



Recrystallization



Auto. Bottom Discharge Centrifuge



Double Cone Dryer



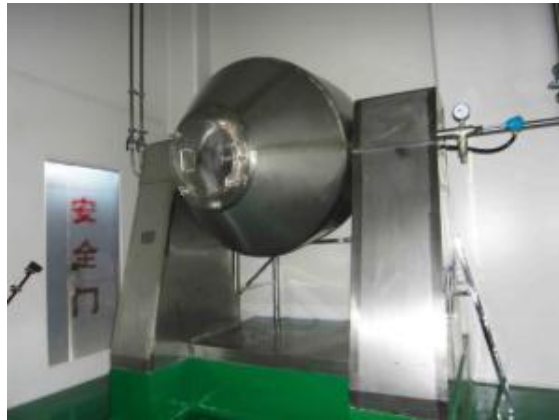
Screening

Workshop K203 Multipurpose

100 to 3,000 liter, 32M³



Pharma
Intermediates
workshop with class
100,000 clean room



Workshop K108 –Capabilities

2,000 to 6,300 liter, 100M³



- ✓ New multi-purpose workshop
- ✓ Building includes unused space held in reserve for future manufacturing-capacity expansion



2nd Floor



1st Floor

4th Floor



Centrifuge



KF Fluorination

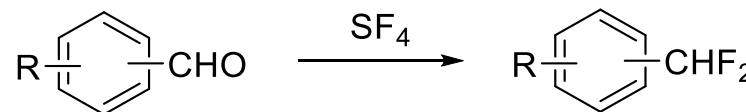
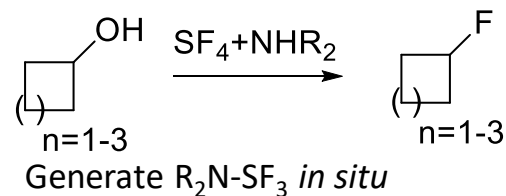
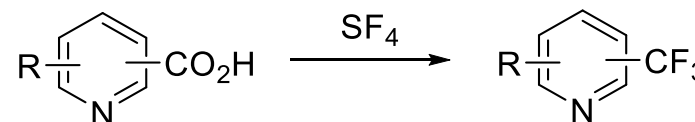
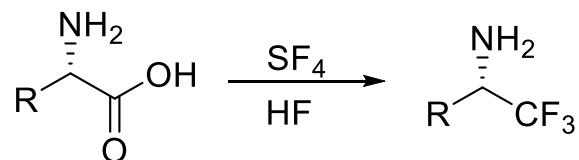
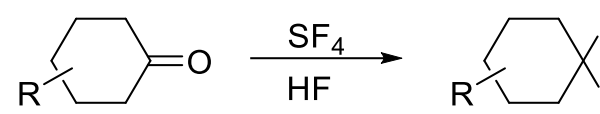
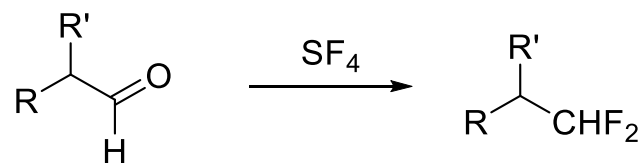
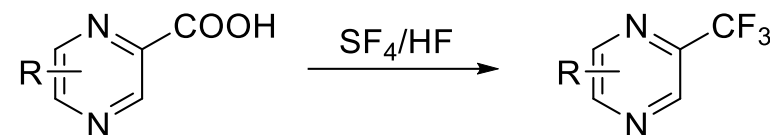
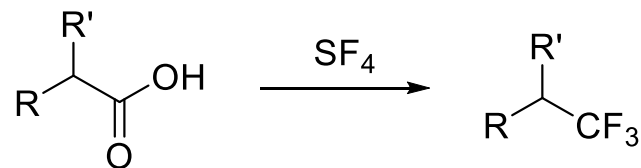
Flexible Intermediate Bulk Container (FIBC)



Mettler Toledo FIBC Automated system

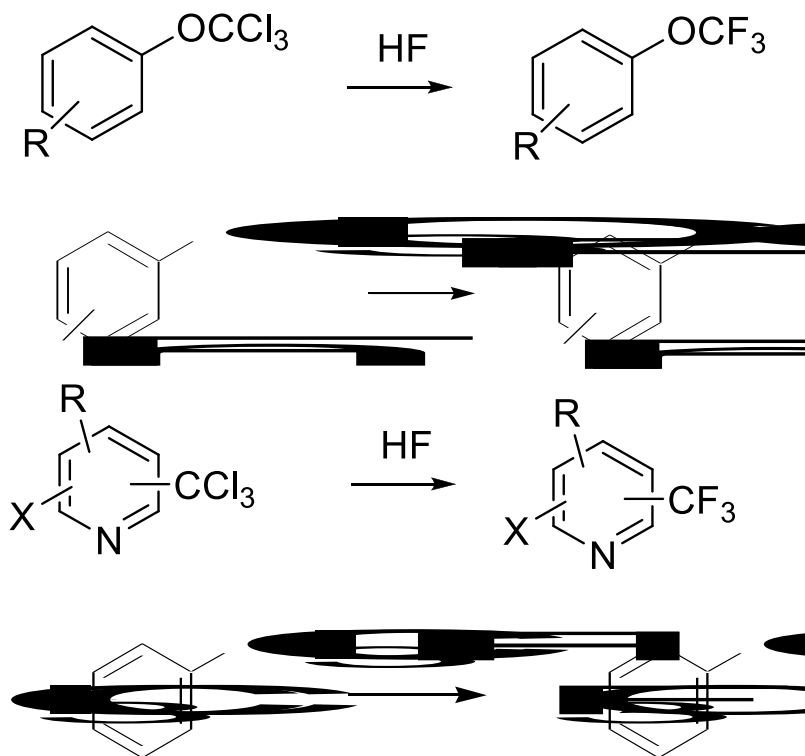
Fluorination capabilities

➤ Deoxyfluorination with SF₄



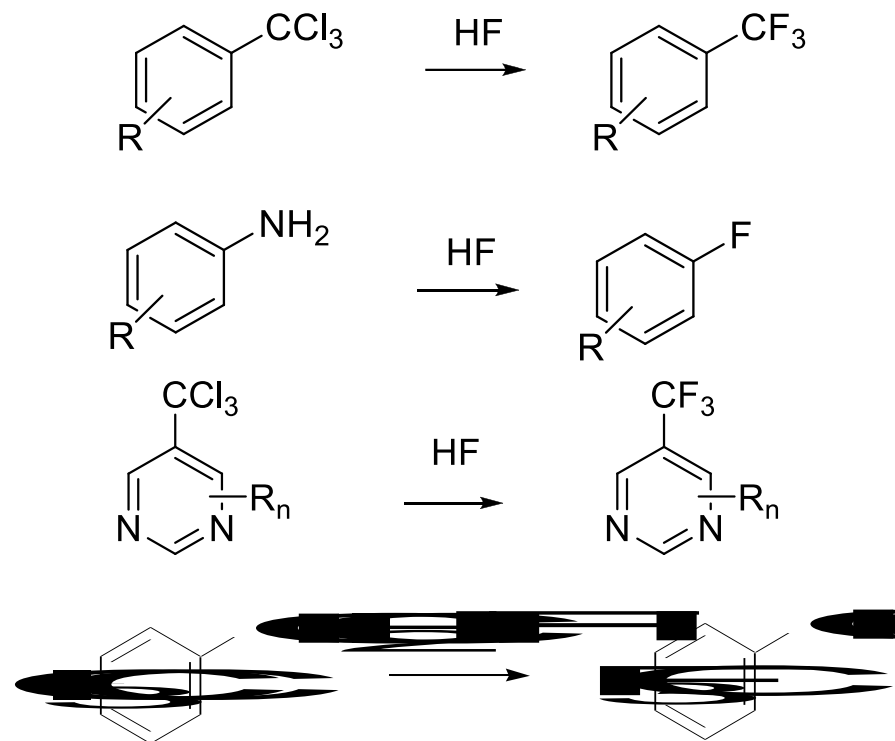
Fluorination Chemistry

HF Fluorination



Units: 1000L ~3000L
10 reactors, 16M³

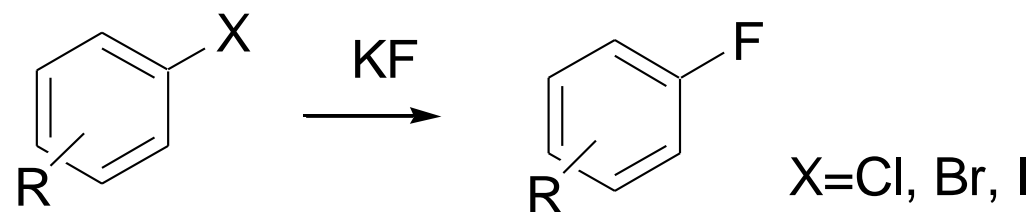
Production history back to 2002
Chemists with 30 years experience



MOCs: MnR, Ni6, Hastelloy, Q345R
Pressure: <10 MPa, Temp: < 260°C

Fluorination Chemistry

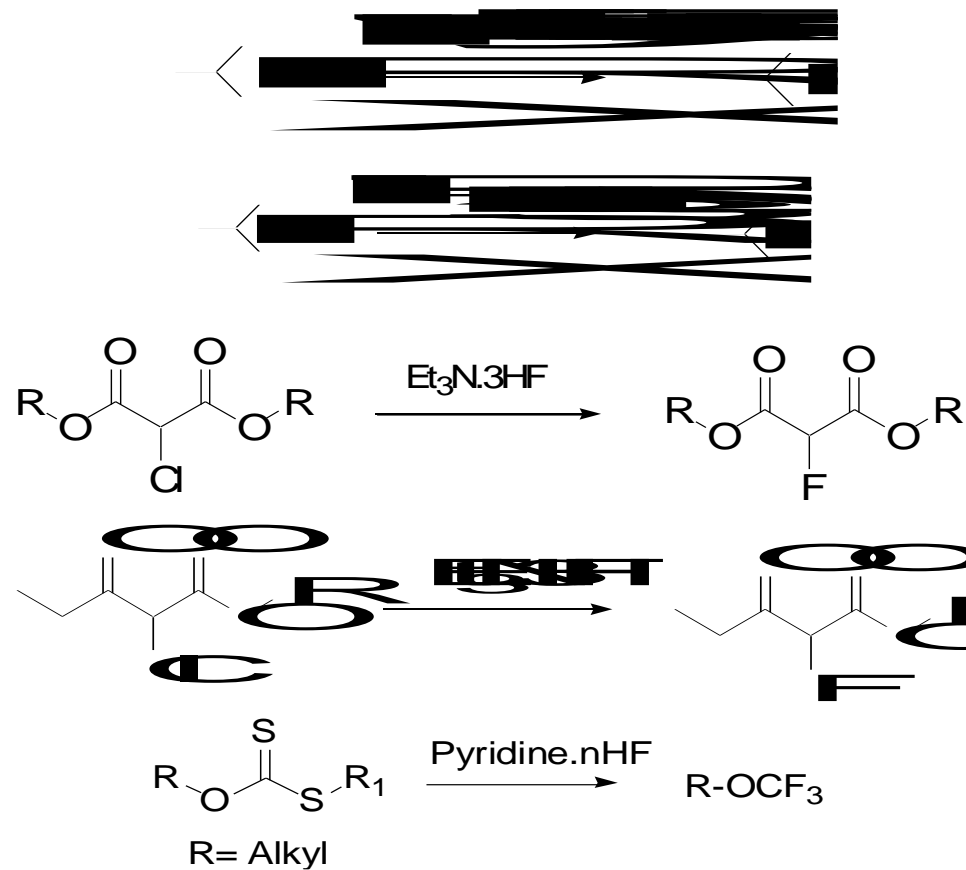
KF Fluorination (Halogen Exchange)



Units: 200L to 6300L , 5 reactors ,15.3M³
Temp: < 250°C

Fluorination Chemistry

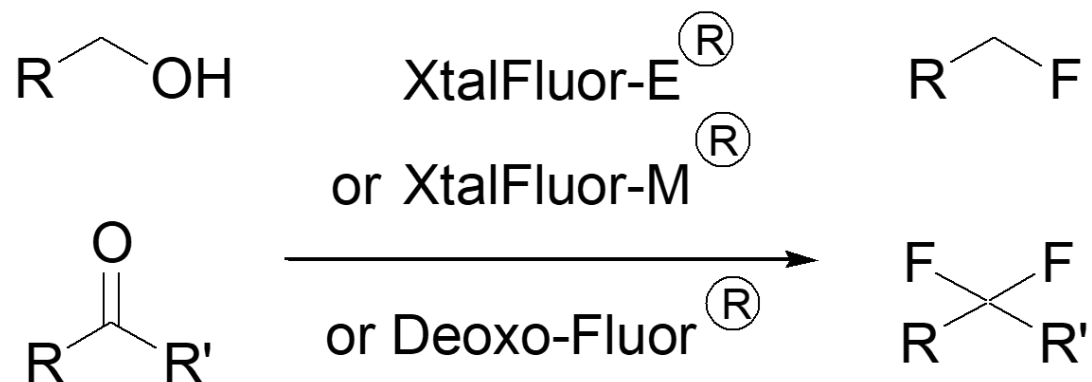
Hydrogen fluoride complex



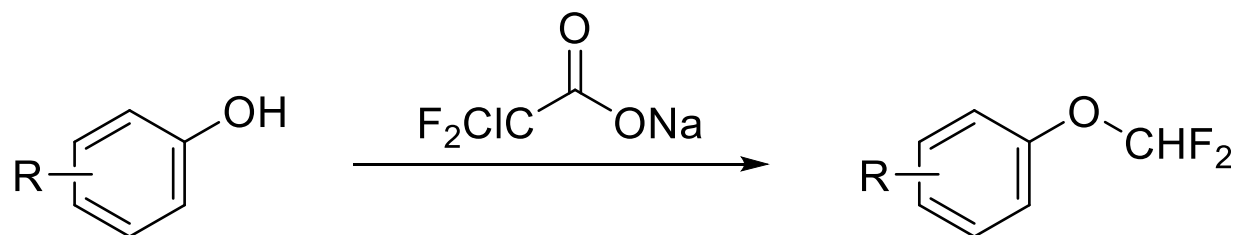
Units: 2L, 10L, 500L
Temp: -80 °C - 50 °C

Fluorination Chemistry

Deoxyfluorination

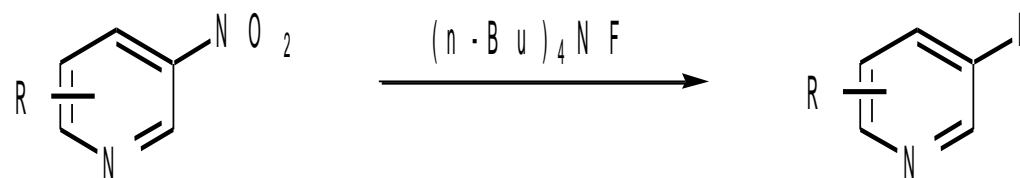


Fluoroalkylation

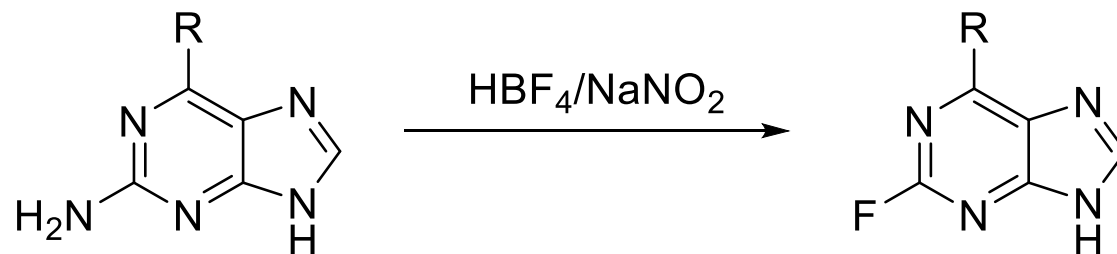


Fluorination Chemistry

Tetrabutylammonium fluoride (TBAF)

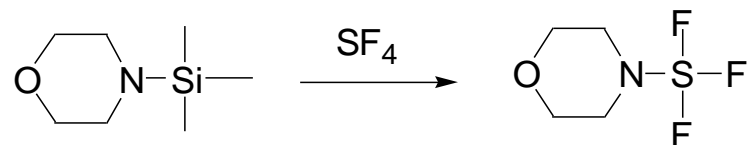
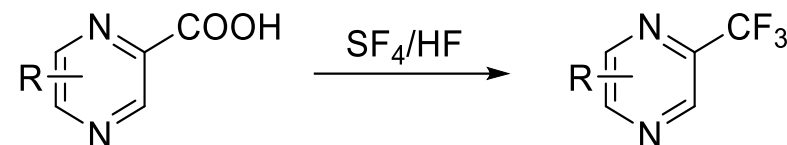
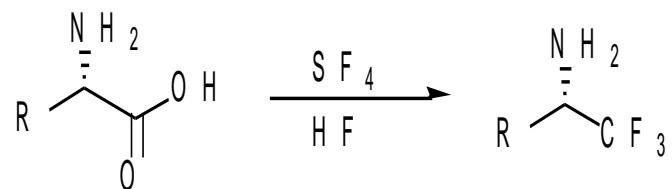
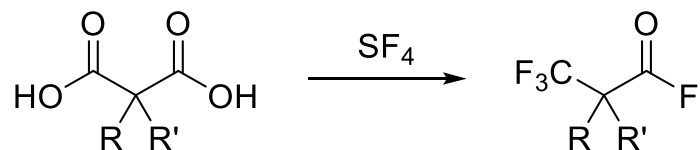
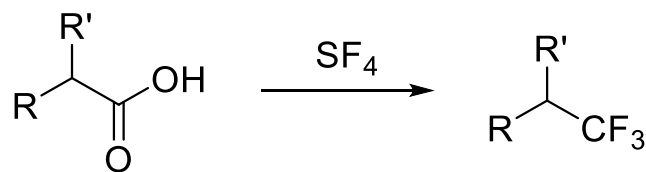


Fluoroboric acid (HBF_4) fluorination



Fluorination Chemistry

Sulfur tetrafluoride (SF₄)



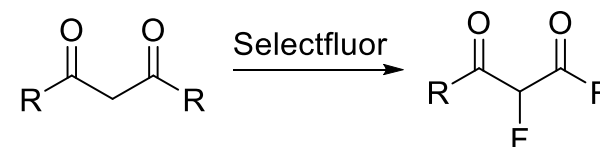
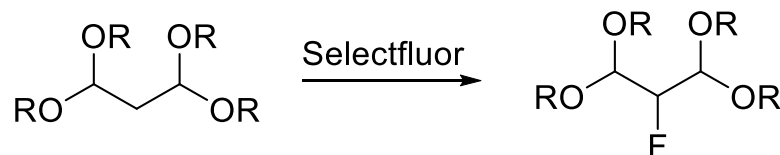
Fluorination capabilities

➤ Nucleophilic fluorination with TMAF

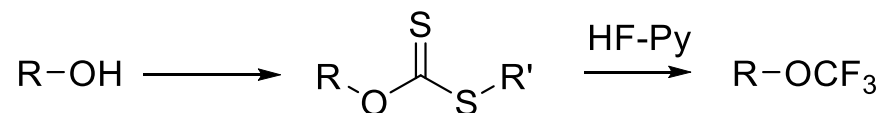


Prepare anhydrous TMAF on site

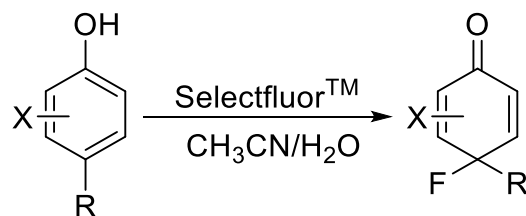
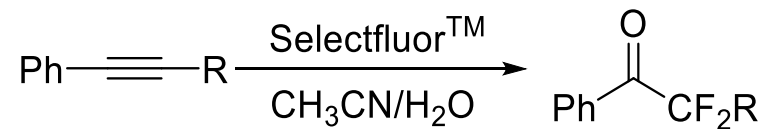
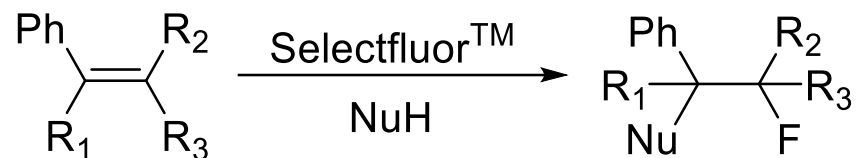
➤ Electrophilic fluorination with Selectfluor



➤ Trifluoromethylation



Electrophilic Fluorination with Selectfluor™



Fluorination Chemistry

SF₄ Fluorination (Workshop K106)



Lab Scale
(2L SF₄ Cylinder each charge)

Production Scale
500 Liter (Hastelloy)



Temp: down to -60 °C
Pressure: up to 4 MPa

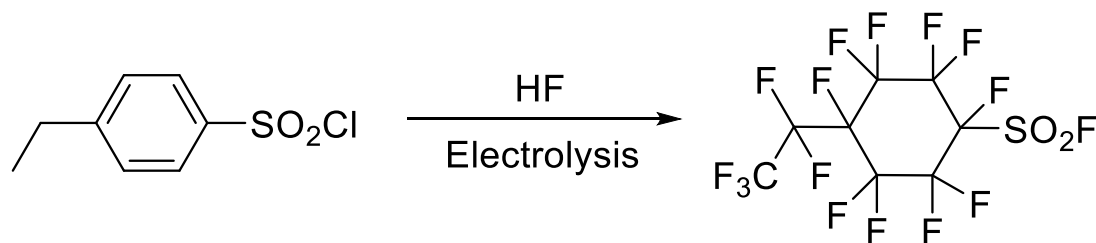
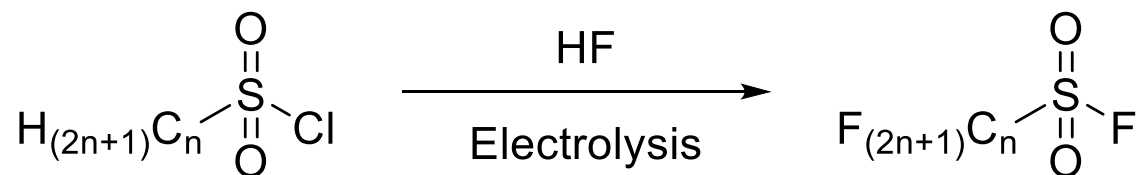
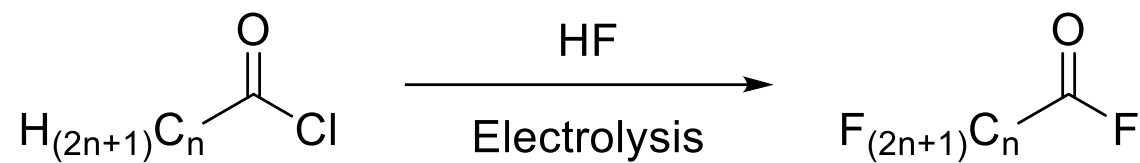
SF₄ Fluorination (Workshop K105)



Production Scale
2000 Liter (Hastelloy)

Fluorination Chemistry

Electro-fluorination



Units: 50L*1, 500L*3, 800 L *3

Temp: -40°C



Fluorination Chemistry

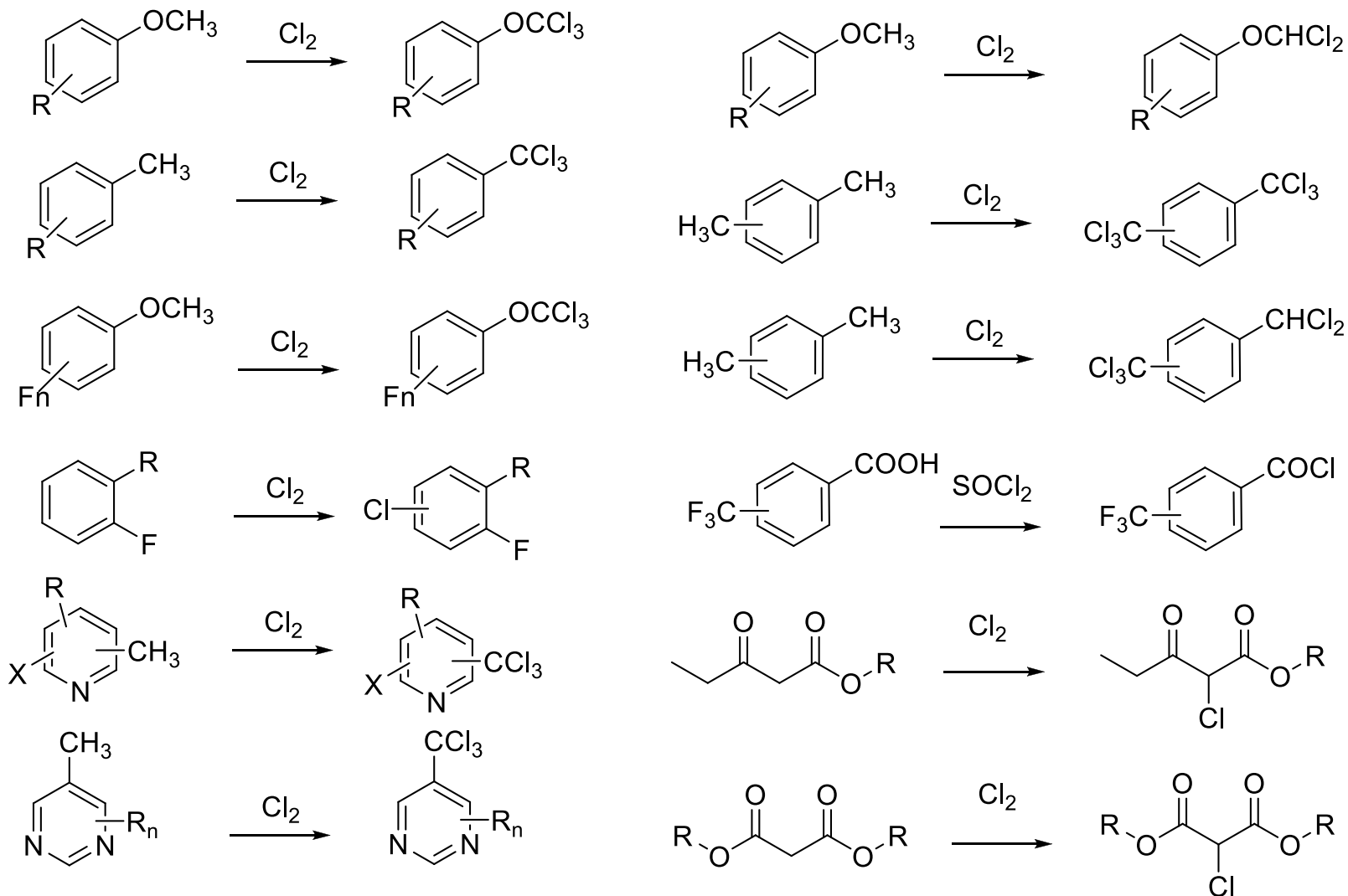
Fluorination with fluorine (F₂)



Structure of material	316L
Reactor volume	500ml
Reaction pressure	6.0Mpa
Reaction temperature	- 25 ~ 150°C
Fluorine feed flow rate	1~100Nml/min
Nitrogen feed flow rate	1~100Nml/min

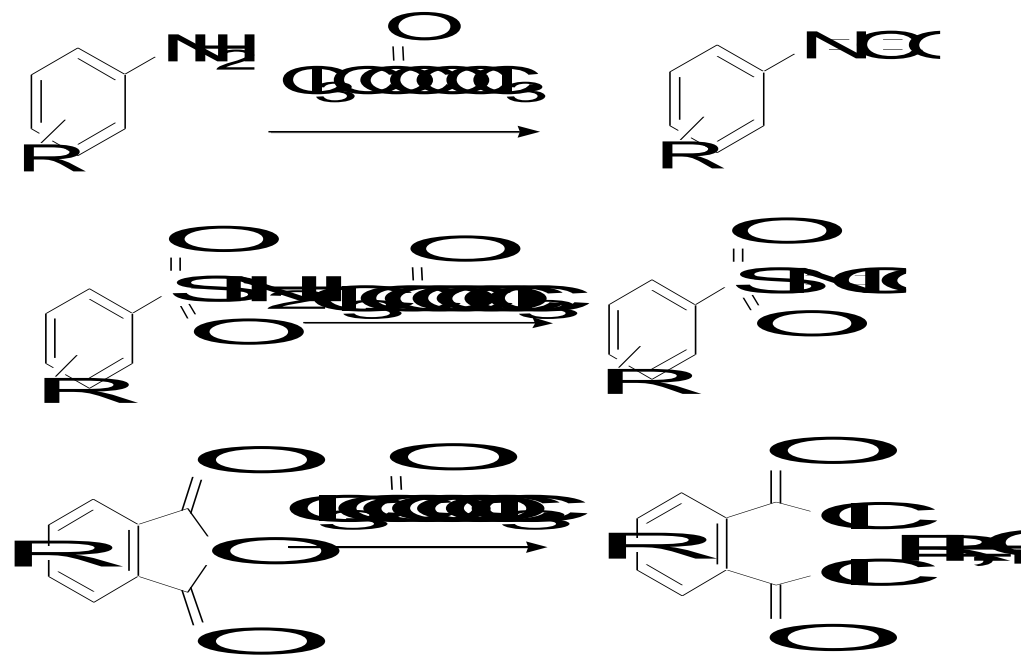
Chlorination Chemistry

Core Competencies-Chlorination



Phosgenation Reactions

Core Competencies-Phosgenation

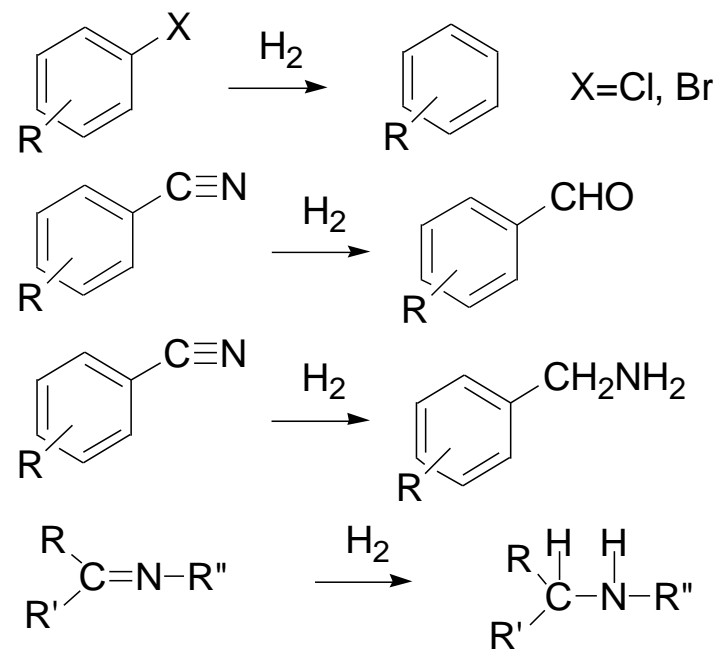
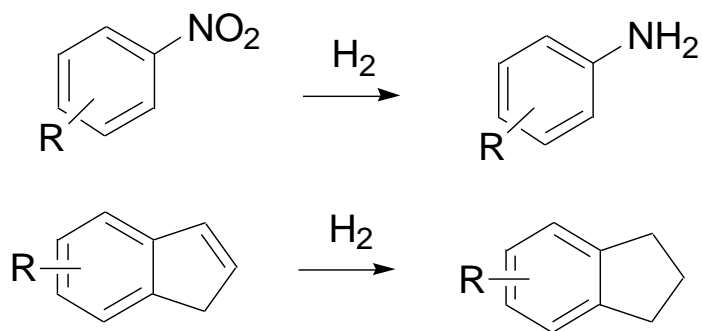


Units: 3000L * 4 reactors (G.L.)

Temperature: -20 to 200 °C

Hydrogenation Reactions

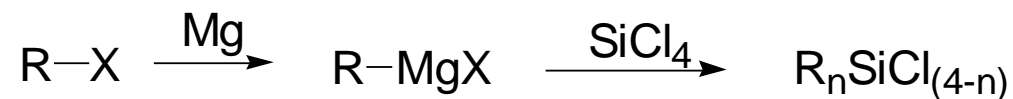
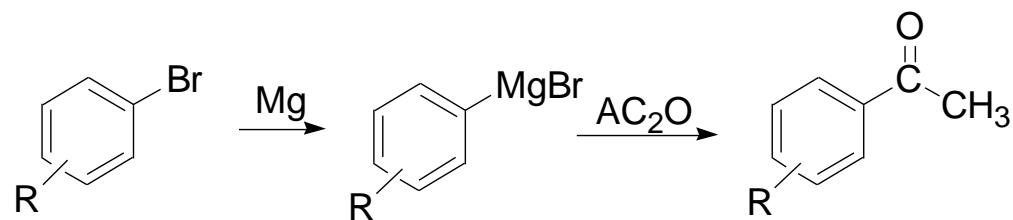
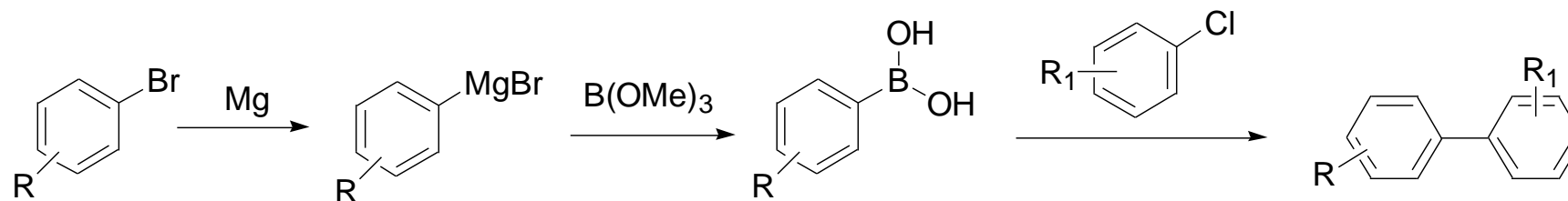
Core Competencies-Hydrogenation



Units: 4 * 2,000 L reactors
Temp.: Up to 200 °C
Pressure: Up to 4.0Mpa

Grignard Reactions

Core Competencies-Grignard Reaction



100L*1, 1000L*3 reactors

Kingchem Production Capabilities

Cryogenic Reactions

Units: 100L*1, 1000L*1,
3000 L*2

Pressure: 1.0 to 4.0 Mpa
(145 to 580 psi)

Temperature: -20 °C to -78 °C

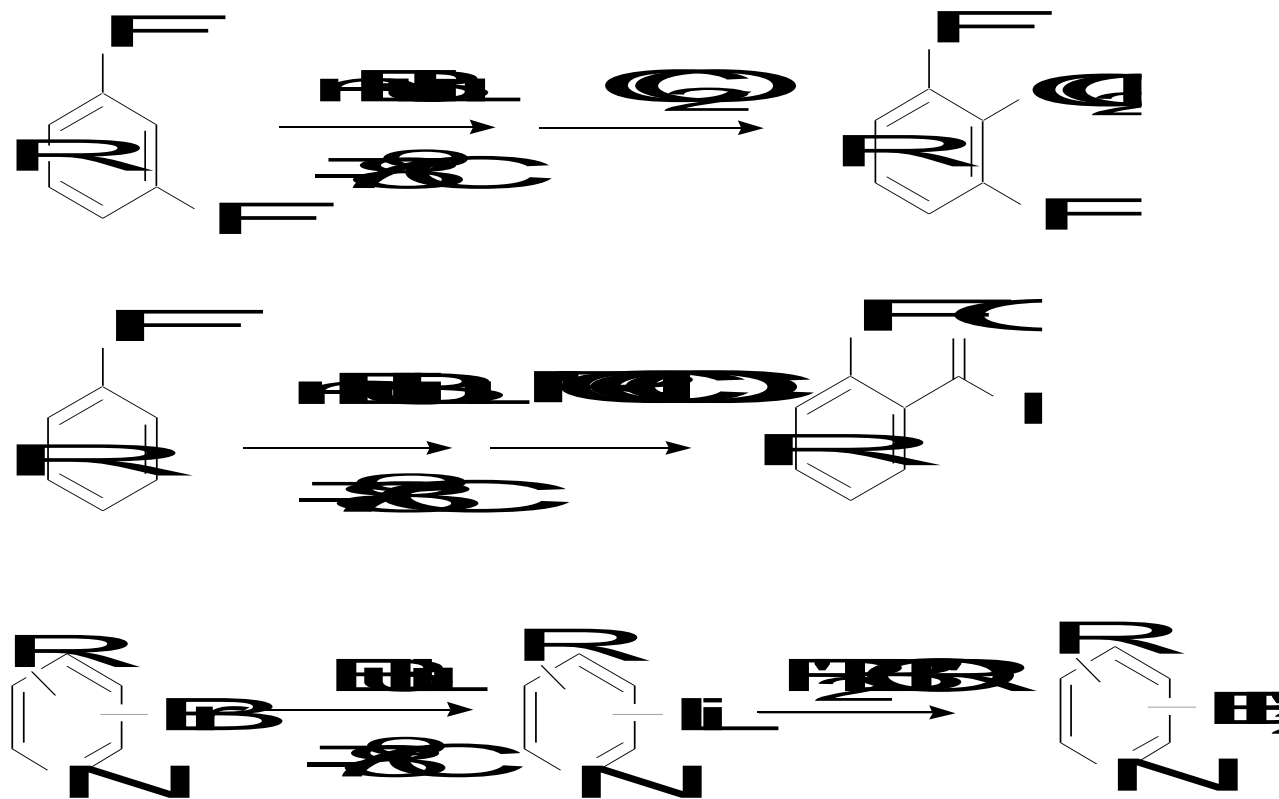
Refrigeration: -78 °C to -20 °C

Liquid Nitrogen: -120 °C

Pressure: up to 1.6 MPa



Cryogenic Reactions



High-Temperature Reactions Facility (Workshop K206)



**High Temperature
Control Panel
&
Receiving Tank**

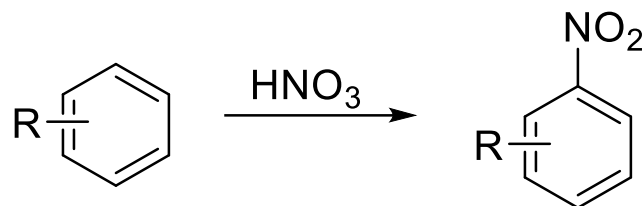


**Overview
K206**

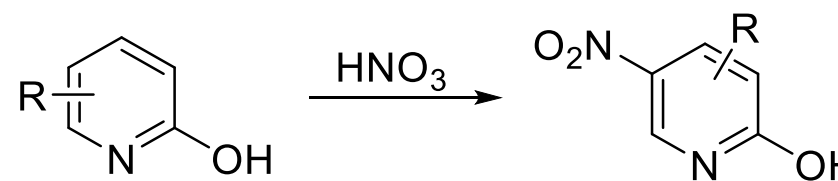


**Critical
Centrifuge
& Reactor**

Nitration Reactions

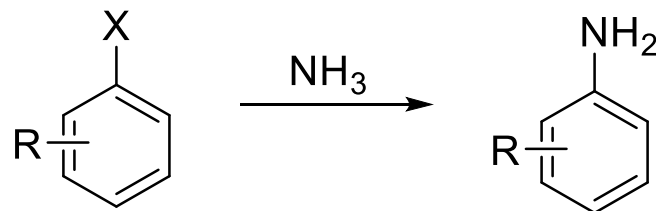


R=H, X, Alkyl, Aryl, OR, CX_n

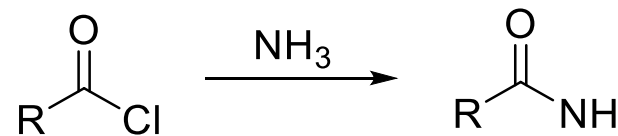


2000L*8 reactors
Temps down to -20 °C

Ammonia Reactions



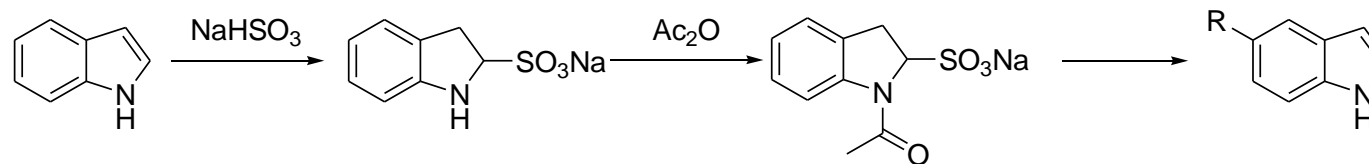
X=Cl, Br



5000L*3 reactors
Temps up to 150 °C

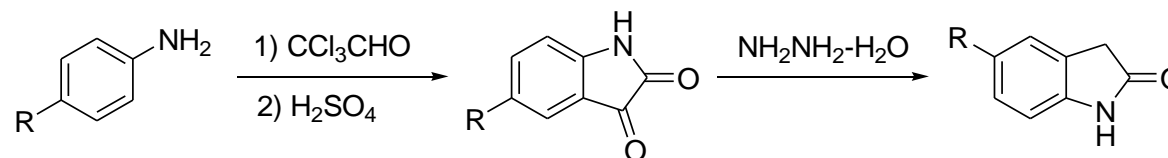
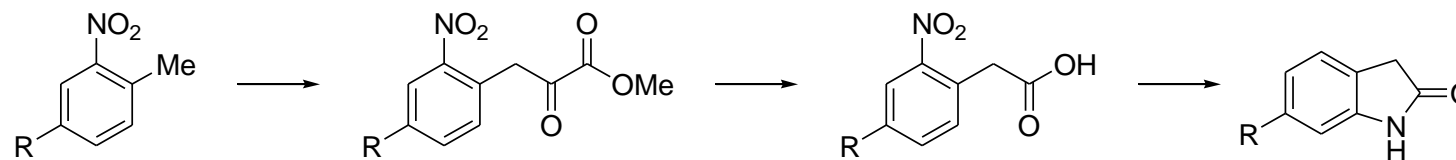
Indole and Oxindole Chemistry

Indole



R = Br, OCH_3 , NO_2 , NH_2 , CN

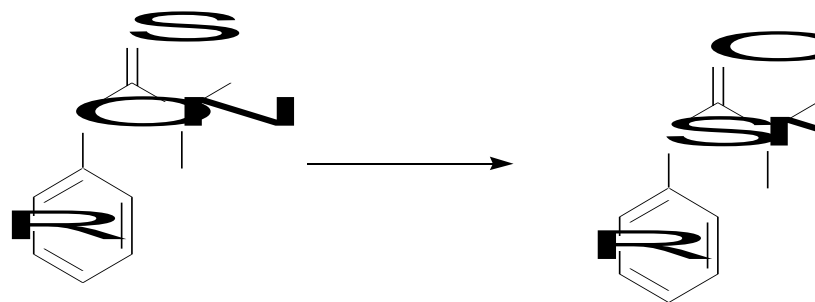
Oxindole



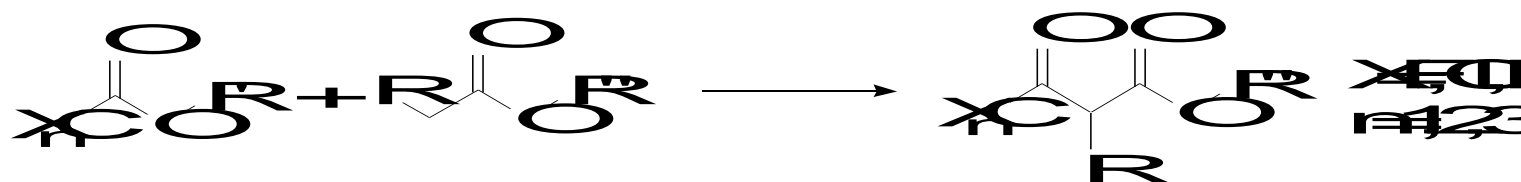
Skraup quinoline synthesis



Newman-Kwart rearrangement



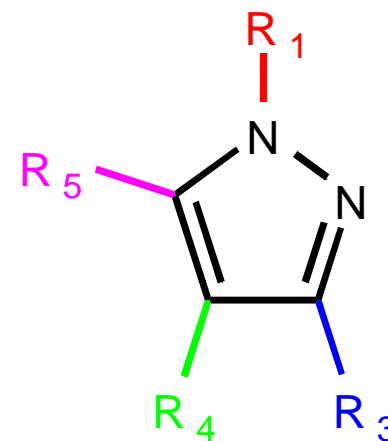
Claisen condensation



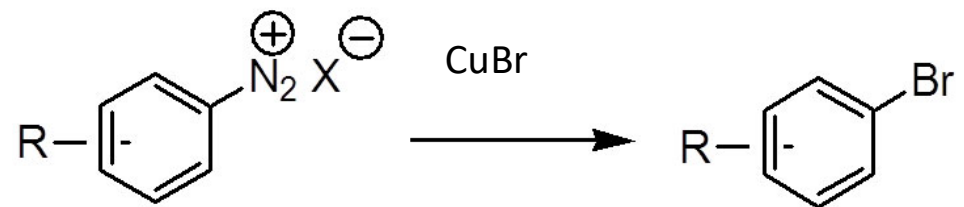
Kingchem Liaoning

Experience with Pyrazoles

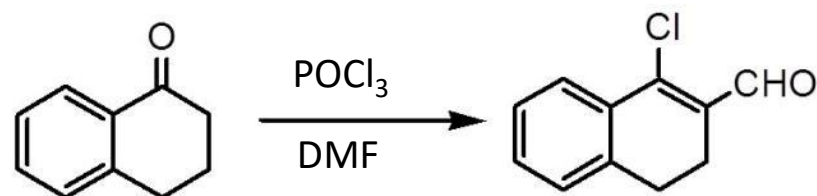
- Our R&D has worked on dozens of structurally different pyrazoles over the last several years
- Kingchem has **developed in-house technology as well as patented** some of our syntheses for pyrazoles
- Kingchem has successfully commercialized a pyrazole, producing more than 10 MT
- R groups include alkyl, aromatic, halogens, amines, carboxylic acids, and other functional groups



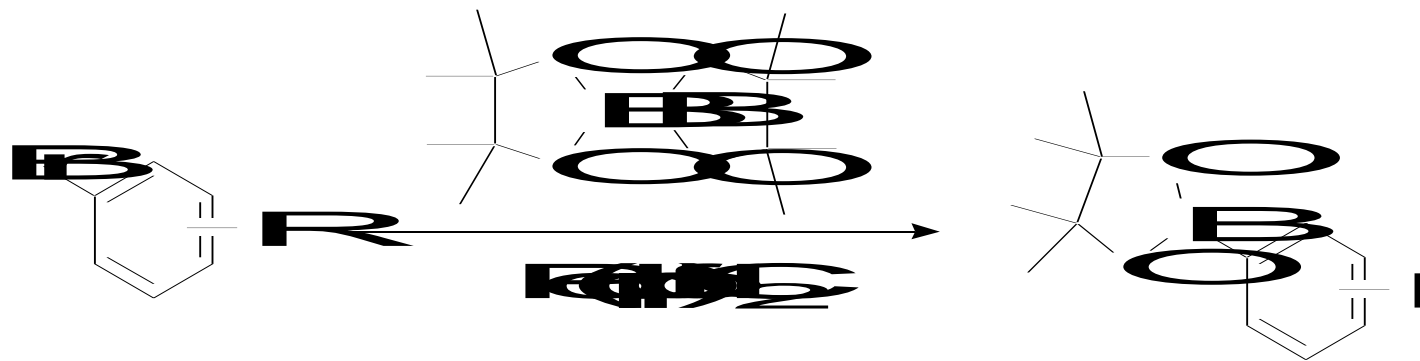
Sandmeyer reaction



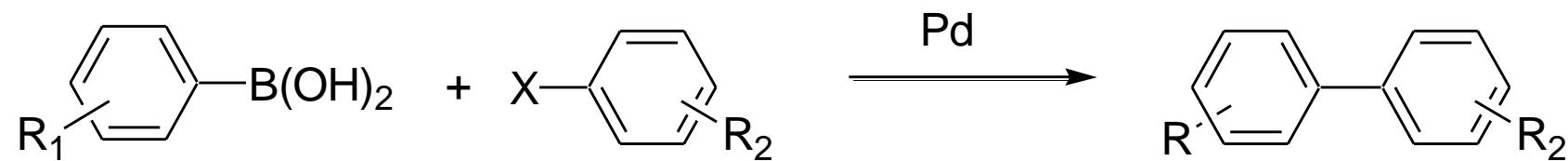
Vilsmeier-Haack reaction



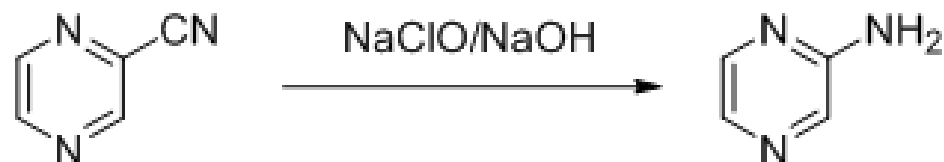
Palladium catalyzed borylation



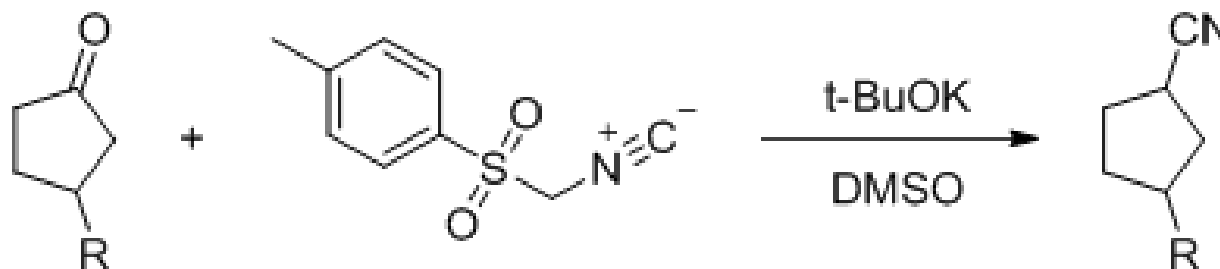
Suzuki coupling



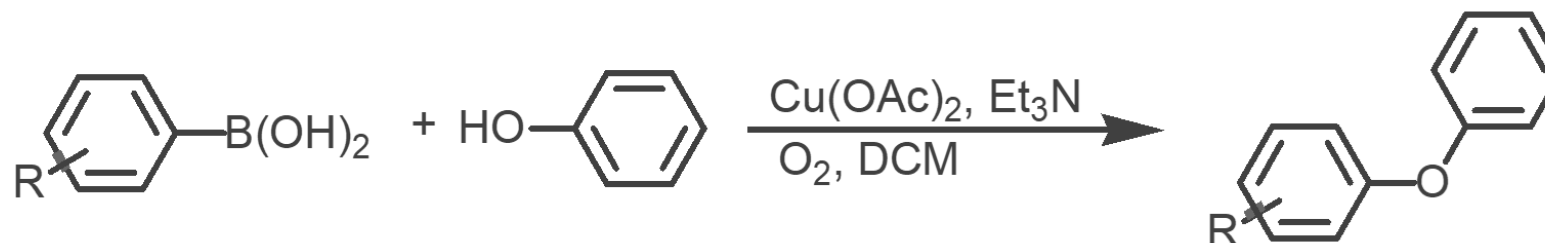
Hofmann rearrangement



Van Leusen reaction



Chan-Lam coupling



Warehousing: Logistical Abilities

New Jersey: Kingchem Warehousing



- Fast turn around
- New Jersey Location
- Experience importing DEA List-1
- C-TPAT certified

New Jersey: Brook Warehousing Systems

Brook

- Logistics solutions serving New Jersey's chemical, pharmaceutical and food industries.
- Compliance, continuous-improvement, environmental and customer-service oriented approach.
- U.S. Customs Bonded Warehousing
- Safe, clean, and secure facilities staffed with experienced professionals.
- D.O.T. Hazardous Materials Training, IATA, IMO, and OSHA in accordance with local, state and federal regulations.
- Close to major transportation

California: BDP International



- A global network group with over 300 offices in 135 countries
- Numerous industry associations
- Numerous industry accredited certifications
- Diverse services available

Services Available

- Ambient and temperature controlled
- Cross-docking
- Just-In-Time Shipping
- Trans-loading
- **C-TPAT compliance**
- DEA List-1 Registered
- HazMat
- Flammables
- Shelf-life management
- Inventory management
- Vendor compliance
- EDI communication

Logistics Enabled

- Reliable, on-time delivery
- National LTL & truckload
- Temperature controlled transportation
- Container drayage
- Intermodal
- Consolidation
- Freight management

Power Supply Management

Electrical System

- ❑ Transformer Substation & Backup Power Capacity: 11,300 KVA
- ❑ Currently our backup can sustain Emergency Response systems, computer network & limited production



Refrigeration Station (540 kW) Add. Ref. Station (2x590 kW) dedicated for K301



Additional Recent Investments:

- High-voltage double loop power supply, 2x1,600 kVA transformer for K301 & K302
- Standby 1X1,600 kVA (Kilovolt-amp) transformer
- New diesel fuel electricity generation
- Substantial production electrical backup support

Beyond the Chemistry: EHS

In-house Biological Wastewater Treatment

Proactively managing waste to minimize the environmental impact of manufacturing.

Waste Water Plant



- Biochemical treatment
- Capacity 700T/Day WW
- Transport to the WW Treatment Center of Industrial Park after treatment
- COD \leq 500, pH: 6 - 9
- F: \leq 10 ppm
- NH₃-N: \leq 30 ppm
- Salinity: \leq 6,000 ppm

Beyond the Chemistry: EHS

Solids & Gas Treatment

Proactively managing waste to minimize the environmental impact of manufacturing.

Solids

- Disposal after sorting
- Disposal by qualified company



Incinerator

Gases



Scrubber System



Beyond the Chemistry: EHS

On site incineration unit:

Slab-type incinerator

Suitability: High concentration and high salt organic waste liquid.

Fuel selection: Natural gas

Incineration temperature:
500~850°C (1st combustion),
≤1100°C (2nd Combustion).

Incineration release: in compliance to
GB18484-2001:

<https://wenku.baidu.com/view/2ca61a0916fc700abb68fcad.html>



Beyond the Chemistry: EHS

Proactive EHS

- 200 meters away from fire-brigade
- 15 minutes away from nearest hospital
- Emergency evacuate & assembly-point training
- Emergency drilling of HF/Cl₂ leakage scenarios
- Kingchem offers high-level corporate support to EHS
- Kingchem promotes cooperation with governmental emergency, safety, environmental- and public-health bureaus to help the entire response network address preparedness concerns
- Kingchem's Fuxin plant is the local training ground for governmental agencies, and other companies



Training Exercises: Kingchem Liaoning Life Science Co.

Kingchem's Safety Commitment

- At Kingchem we are committed to safe, cost effective, and environmentally conscious scale up.
- The advanced synthesis and safety evaluation performed at Kingchem ensures the reaction conditions are well understood and our processes are reliable.

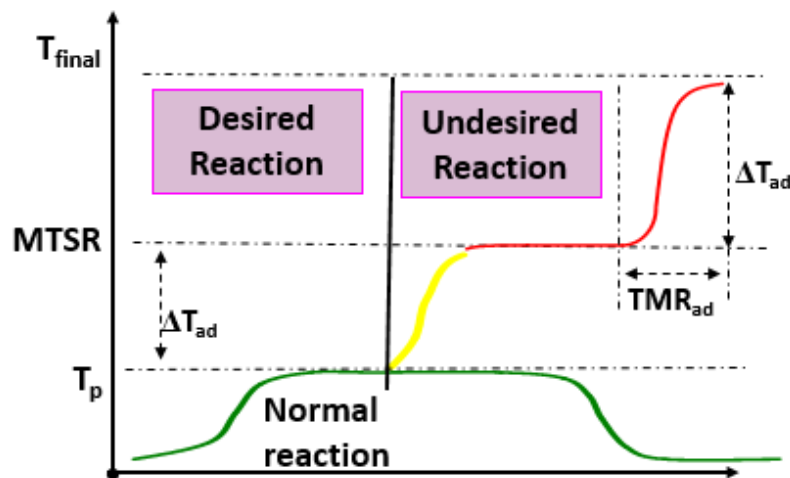


Fig. Runaway scenario (Stoessel,2009)

Table. Assessment criteria for the severity of a runaway reaction (Stoessel, 2009)

Severity	ΔT_{ad}	P	Extension
Catastrophic	>400	P_{test}	> site
Critical	200-400	$P_{max} < P < P_{test}$	Site
Low	50-200	$P_{set} < P < P_{max}$	Plant
Negligible	<50	$P < P_{set}$	Equipment

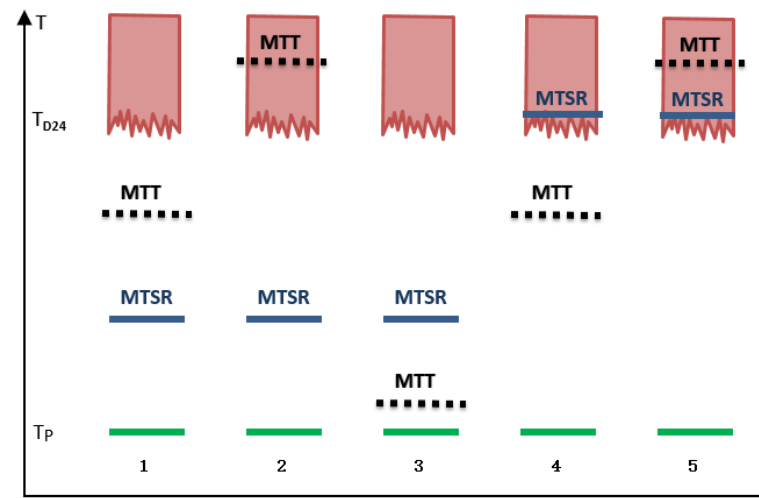


Fig. Criticality classes of scenario (Stoessel, 2009)

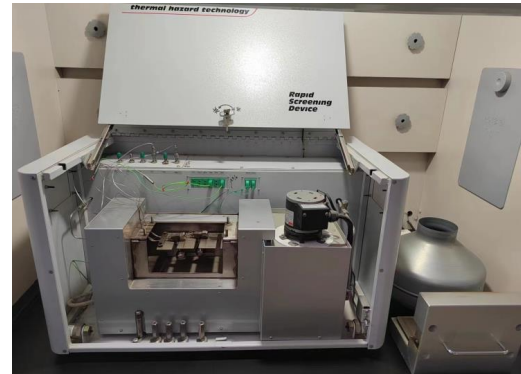
T_p – Initial temp in cooling failure
 MTSR – Max Temp of Synthetic Rxn
 MTT – Max technical temperature. BP or pressure valve.
 T_{D24} – Highest unproblematic temp

Advanced Synthesis & Safety Evaluation

- RC-1 (Mettler Toledo)
- DSC (Mettler Toledo)
- RSD (Thermal Hazard Technology)
- EasyMax (Mettler Toledo)



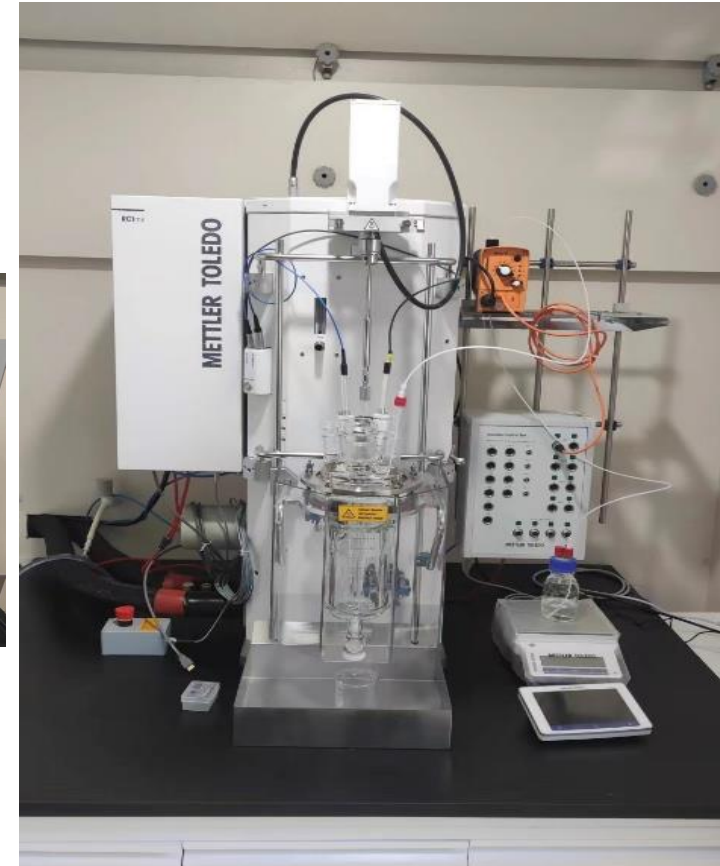
DSC (Mettler Toledo)



RSD (Thermal Hazard Technology)



EasyMax (Mettler Toledo)



RC1 (Mettler Toledo)

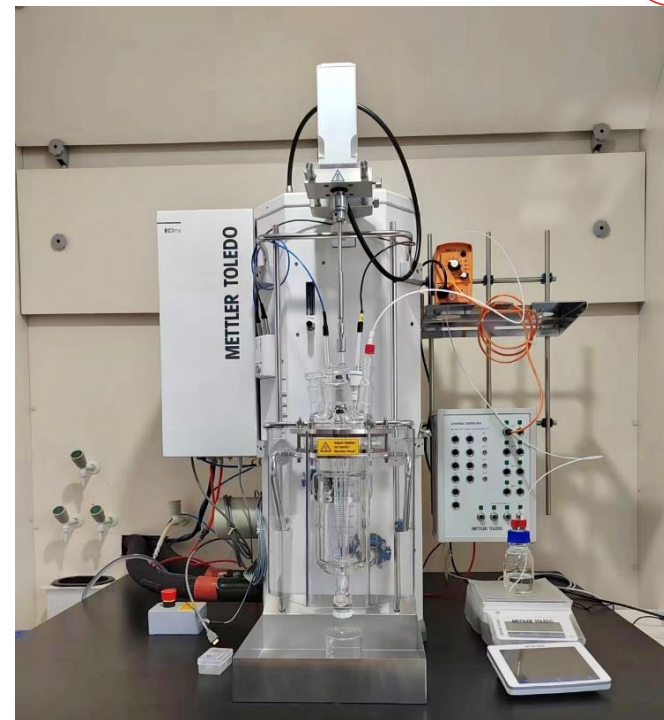
Advanced Synthesis & Safety Evaluation

➤ RC-1 (Mettler Toledo)

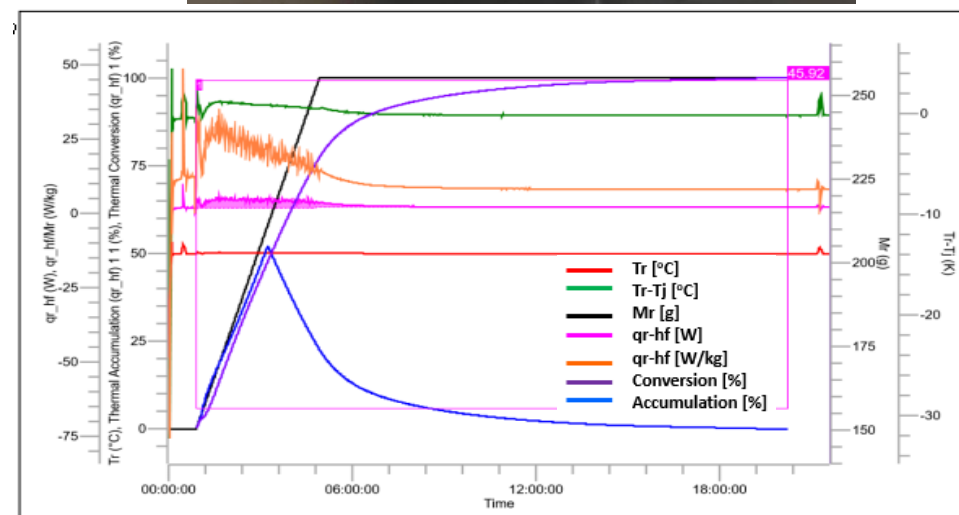
What is Reaction Calorimetry?

Reaction calorimetry measures the heat released from a chemical reaction or physical process and provides the fundamentals of the thermochemistry and kinetics of a reaction.

The information obtained is essential to describe the heat release of a chemical reaction over time, and to safely transfer it from lab to plant.



- Uncovers unexpected reaction behavior
- Makes any scalability issues visible and quantifiable
- Identify issues related to heat and mass transfer or mixing
- Allows the determination of the correct temperature, stirring or dosing profile
- The information obtained is subsequently used to evaluate the risk, scalability and criticality of a process



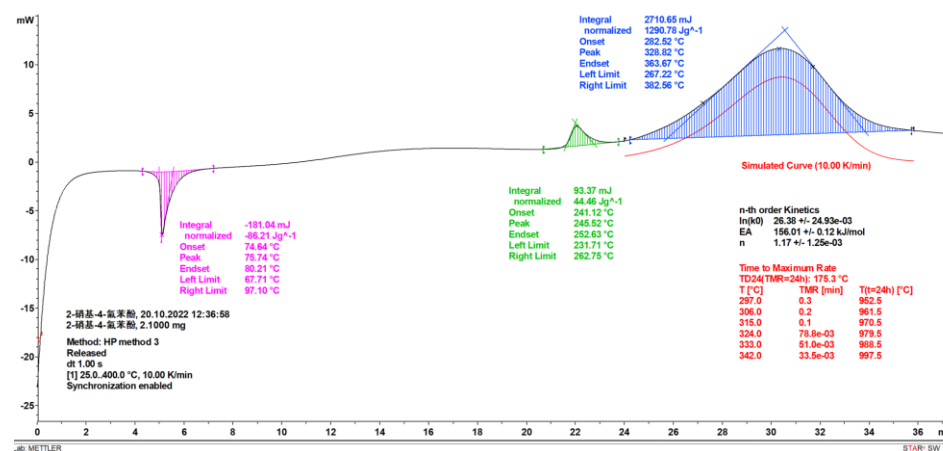
➤ DSC (Mettler Toledo)

What is Differential Scanning Calorimetry?

Differential scanning calorimetry (DSC) is the most frequently used thermal analysis technique. DSC measures enthalpy changes in samples due to changes in their physical and chemical properties as a function of temperature or time.



- Onset temperature
- Heat of reaction, ΔH_R
- Specific heat capacity,
- Adiabatic temperature rise, ΔT_{ad}
- Latent heats of melting or evaporation
- Melting point or boiling point



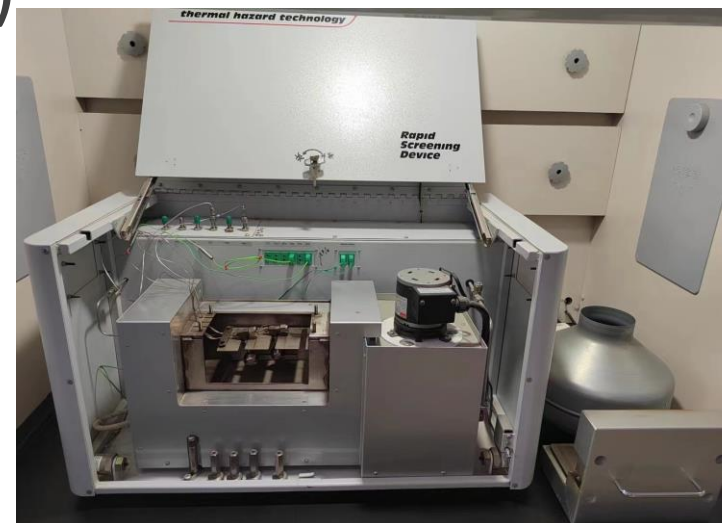
➤ EasyMax (Mettler Toledo)

- Develop & optimize new synthesis routes
- Increase speed of development & reduce cost.
- Perform thermal evaluations with HFCal Starter Kit



➤ RSD (Thermal Hazard Tech)

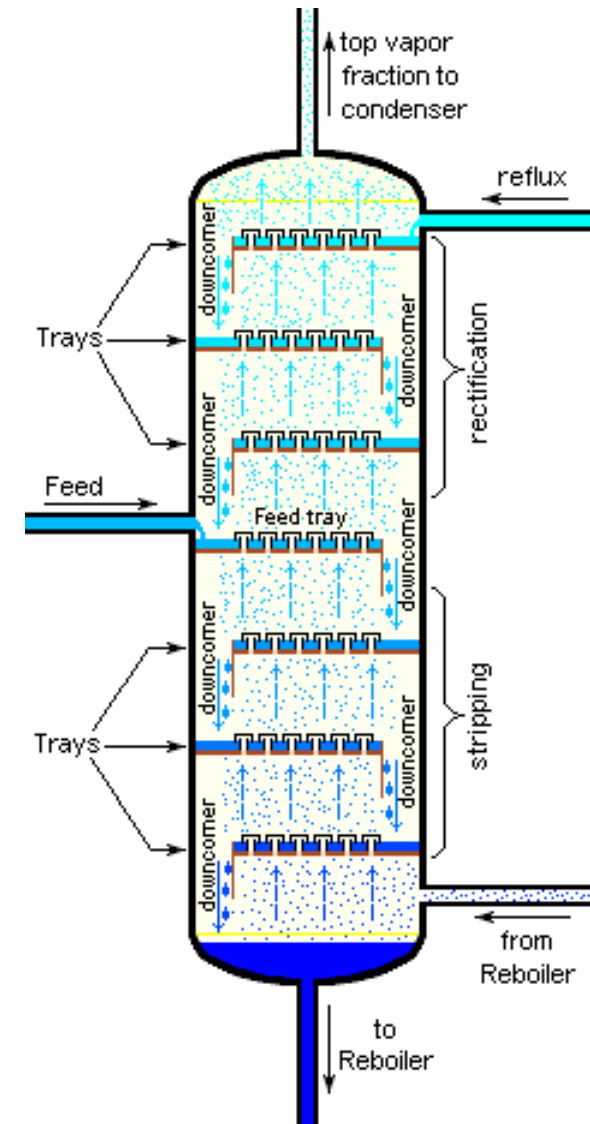
- Thermal stability
- Order of the reaction
- Rate of temperature rise, dT/dt
- Gas evolutions rate, dP/dt
- Max. temperature and max pressure
- Weight loss during decomposition



Kingchem Core Technologies

Distillation Capabilities

- Kingchem has over 50 distillation columns
- Every workshop is equipped with expansive distillation columns each having a minimum of 10 theoretical plates
- Rectification columns use either corrugated gauze / SS or ceramic corrugated structured packing
- Max temperatures of 150-200°C
- Kingchem has 6300L*5 columns, each vertically packed with 8m of ceramic corrugated structured packing, giving a total of **30 theoretical plates** per column



Liaoning Fuxin Chemical Industrial Park

- Established in 2008
- Province chose fluorochemical industry to replace coal mining
- This park has been certified as a provincial level of industrial park since 2012
- 25 km away from downtown Fuxin
- Currently occupies 7 sq km and is planned to cover 20 sq km
- 42 companies in this park and more than 20 companies of that have started the production or trial production, the other companies are under construction
- Kingchem is the seed of Fuxin Chemical Industrial Park and it's the oldest and largest company in terms of area, employees, sales revenue up to this date.

辽宁省人民政府

辽政〔2012〕203号

辽宁省人民政府关于同意阜蒙县氟化工产业基地晋升为省级经济开发区的批复

阜新市人民政府：

你市《关于将阜蒙县氟化工产业基地晋升为省级开发区的请示》(阜政〔2012〕18号)收悉。现批复如下：

一、同意将阜蒙县氟化工产业基地晋升为省级经济开发区，并更名为辽宁阜新氟产业开发区。开发区规划总面积为20平方公里，四至范围为：北至阜锦公路，南至二道河子村，西至伊吗图镇庄家店村，东至伊吗图河。

二、你市要加强对辽宁阜新氟产业开发区的领导和管理，城市

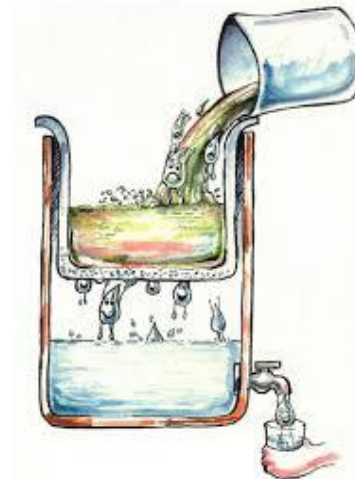
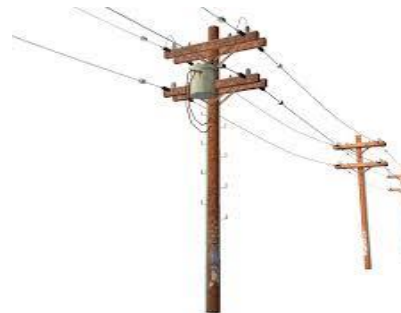
总体规划和土地使用严格执行国家有关规定，做好开发区规划与土地利用总体规划的衔接。

三、辽宁阜新氟产业开发区要积极提高开放水平，大力加强招商引资工作，完善体制机制，增强创新能力，充分发挥辐射、示范和带动作用。



Liaoning Fuxin Chemical Industrial Park

- Over 70 km of roads in industrial park
- High speed train is going through Fuxin
- Two level wastewater treatment (individual company & the park)
- Water purification plant produces 50,000 MTs per day
- 2 power substations, double loop power supply transformer with a capacity of 330,000 KVA. An additional 3 substations (totaling another 240,000KVA) are planned
- Total steam capacity in operation is 620 MW (steam capacity: 70mts/h)



Liaoning Fuxin Chemical Industrial Park

- 1 fire squadron in park
 - 4 fire fighting trucks
 - 1 dry powder truck (4 MT)
 - 1 water truck (5.5 MT)
 - 2 foam trucks (2 MT each)
- Only 15 minutes from the nearest hospital
- Industrial park is well networked with China Unicom, China Mobile and China Telecom



Liaoning Fuxin Chemical Industrial Park



- Park wastewater treatment plant capacity is 15,000 MT/day.
- This park's wastewater treatment plant is operated by Guangdong Yeanovo E.P. Co., Ltd, the well-known environmental treatment company in China.
- The park will continue to invest in upgrading existing facilities. A second wastewater treatment plant (capacity: 35,000 MT/day) is being planned for treatment of industrial wastewater.



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