

Welcome to
Optima
Chemical
Group, LLC





Who We Are

- Privately owned with solid financial resources (i.e., self-sufficient for capital needs)
- Two Companies/Production Sites: Optima Chemical - Douglas, GA
Optima Belle - Belle, WV
- Manufacturing operations began 1990 in Douglas, GA
- > 150 Employees Total
- ISO 9001 certified at both locations
- Diverse Sales revenue from Optima products, custom, and toll manufacturing

A global supplier of specialty chemicals,
toll and custom manufacturing services.





Industries Supported

- Pharmaceutical
- Catalysts
- Polymers
- Energy
- Electronics
- Nutraceutical
- Biomaterials
- Personal Care

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Pharmaceutical

- Provided early intermediates and reagents for over 25 years.
- Historical focus on organometallic reagents with recent growth to one of largest Boronic Acid suppliers to the industry.
- Supplying downstream custom intermediates and custom reagents from grams to multi-metric tons.
- Custom/toll manufacturing services includes registered starting materials (RSMs), excipients, and nutritional intermediates.



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Catalyst Services & Products

Offer broad range of services and products including toll manufacturing, intermediates, reagents, ligands and custom manufacturing

Types of Catalyst

- Heterogeneous
- Homogenous
- Enzymes & Biocatalysts

Application areas

- Petroleum Refinery
- Petrochemicals & Polymers
- Fine Chemicals (including Pharma)
- Environmental (emission control)

Chemical Type

- Metal
- Zeolite
- Friedel-Crafts
- Metallocene
- Organometallic
- Acid Base
- Enzyme (including fermentation)

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Polymers & Additives

- Reactive polymerizations
(Condensation, radical & anionic)
- Recovery & generation services for
resins – washing, isolation, & drying
- Custom mfg of various polymer
additives used across multiple
industries



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Energy Storage

- Working from established players in the consumer market to entrepreneurs & start-ups with new technologies addressing the global shift to renewable energy.
- Focused on cathode material development and production for consumer and EV markets that utilize our capabilities to handle metals, like Lithium, Nickel, and Cobalt from pilot to commercial scale.
- Growth in anode materials using our experience and technologies with organosilanes through to polymerizations.
- New technologies around on carbon capture and grid related solutions utilize our development resources and capabilities to assist clients with scale-up from lab to pilot and beyond.



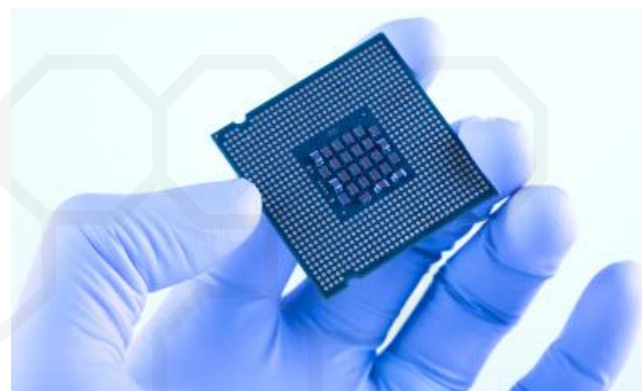
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Electronic Chemicals

- Atomic Layer Deposition (ALD) Precursors
- Core competencies and capabilities to manage high energy, pyrophoric and air sensitive metal based and silane chemistries.
- Full range of development and manufacturing scales to manage 10's kg to 100 tons of ALD materials.



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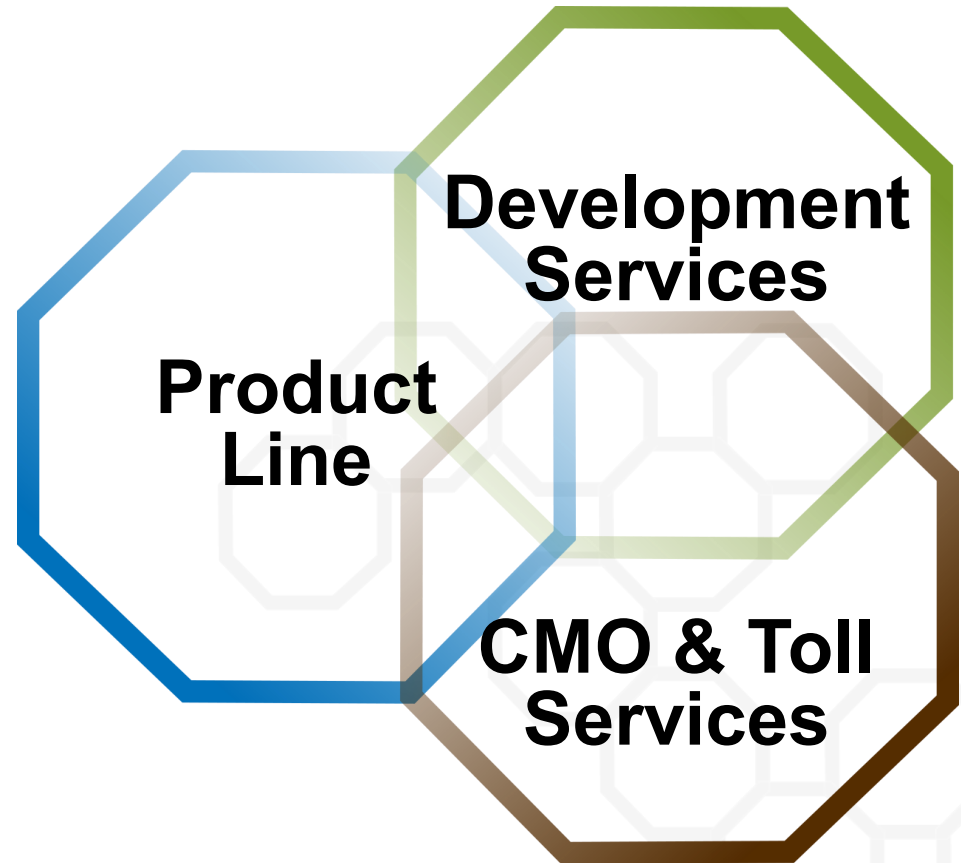




Technology

Capabilities

Manufacturing



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Processes & Chemistries

- Organometallic Reactions – (Li, Mg, Na, K)
- Substituted Boronic Acids - Suzuki Coupling reactions
- Phosphorus chemistry (PCl_3 , etc.)
- Friedel-Crafts Reaction
- Hydrazine chemistry
- Pyrophoric/water reactive/oxygen sensitive materials
- Biomass Extractions / Leaching
- Hydrogenations up to 250 psi

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Product Portfolio

- Boronic Acids, Grignards, Organolithiums, Organophosphines, and related intermediates
- 300+ materials developed & manufactured
- Grams – Kilos – Metric-ton Scale-up
- Full time Development of new materials
- Research assets available on contract basis

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Analytical Services

- Full service Analytical Lab for method development, raw material and final product release at both sites
- Analytical Equipment:
 - GC, HPLC, ICP-OES, XRD, FTIR
 - GC – Mass Spec
 - Karl Fischer, Density Meter, Auto Titrator, VIS Spectrophotometer
 - Outside Lab Services for NMR, DSC, and TGA:
 - Valdosta St University & University of North Carolina – Charlotte





Analytical Services

ARSST – Advanced Reactive System Screening Tool

- Critical Process Safety Parameters:
 - Adiabatic temperature & pressure rates
 - Heat of reaction or mixing
 - Onset of decomposition
 - Time to maximum rate (TMR)
- Correlation to process upset conditions:
 - Loss of cooling or agitation
 - Contamination of batch
 - Thermal decomposition
 - External heating or fire exposure





Health, Safety & Environment

- OSHA's Voluntary Safety & Health Program
- OSHA 1910: Process Safety Management Compliant
- Fully implemented Behavioral Based Safety program (DuPont STOP®)
- SOCMA ChemStewards Tier III Excellence company
- EcoVadis – Silver Sustainability Rating: 2021-2023

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Pilot Plant - Douglas

- 50 – 1000 Gallon Reactors:
 - Glass-lined and Stainless Steel
 - Temperature Range: -80 to 250°C
 - Pressure: 0 to 180 psi
- Isolation/Filtration:
 - 2.0 m² Hastelloy Rosenmund® filter/dryer
 - Filter press
 - 0.2 m² Buchner filter
- Dryers:
 - 70ft³ Double cone dryer
 - Ribbon Dryer, jacketed and vacuum-rated
 - Littleford Plow Dryer, jacketed and vacuum-rated
 - Vacuum Tray Dryer



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Commercial Plant - Douglas

- ~100,000 Gallon Reactor Capacity:
 - 2000 – 5000 Gallon: Hastelloy, Glass, Stainless Steel
 - Temperature: 0 to 250°C
 - Pressure: 0 to 250 psi
- Isolation/Filtration:
 - Zwag Filters, Solid Bowl, Basket & Disk Centrifuges
 - Filter Presses
- Dryers:
 - Glass-lined & Hastelloy Double Cone
 - Stainless Steel Pan type
 - Rotary & Process-All PLOW Dryer
- Fractional Distillation:
 - Solvent recovery/recycle
 - 36 in. diameter column, 33 fixed bubble trays
 - 12 in. diameter packed column, 23 theoretical plates



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Commercial Plant - Belle

- Former DuPont Site
- Acquired two production facilities in 2015
- Shared utilities via Chemours
- Access to rail & barge access for raw material & finished goods transport
- On-site industrial waste-water treatment plant
- FIFRA Registration – Ag Intermediates
- Delta V Distributed Control System



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Commercial Plant - Belle

- ~30,000 Gallon Reactor Capacity:
 - 500 – 4000 Gallon: Hastelloy, Glass, Stainless Steel
 - Temperature: -29 to 250°C
 - Pressure: 0 to 100 psi
- Isolation/Filtration:
 - Hastelloy & Stainless Basket Centrifuges
 - Stainless Filter Housing w/ 18 bags
 - Rosenmund Filter Dryer
- Dryers:
 - 2000 gallon Hastelloy Filter dryer
 - Hastelloy Paddle Dryer – 1200 gallon



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Capacity & Capability Expansions

- **\$30 Million CAPEX Spend from 2022-2024**
- **Support Customer Growth, Rebuild, and Future Demands**
- **Douglas, GA Site:**
 - 2 x 5000-gallon SS pressure reactors
 - Additional centrifuge capacity
 - Pilot Plant expansion w/ air sensitive solids handling
 - Analytical Lab upgrades
- **Belle, WV Site:**
 - 2 x 4000-gallon SS & 750-gallon GL reactors
 - 5 m² Nutsche Filter Dryer
 - 48" Basket Centrifuge

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Please visit us at booth #402

Web: www.optimachem.com

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