

TCL RESEARCH

Your partners
in research



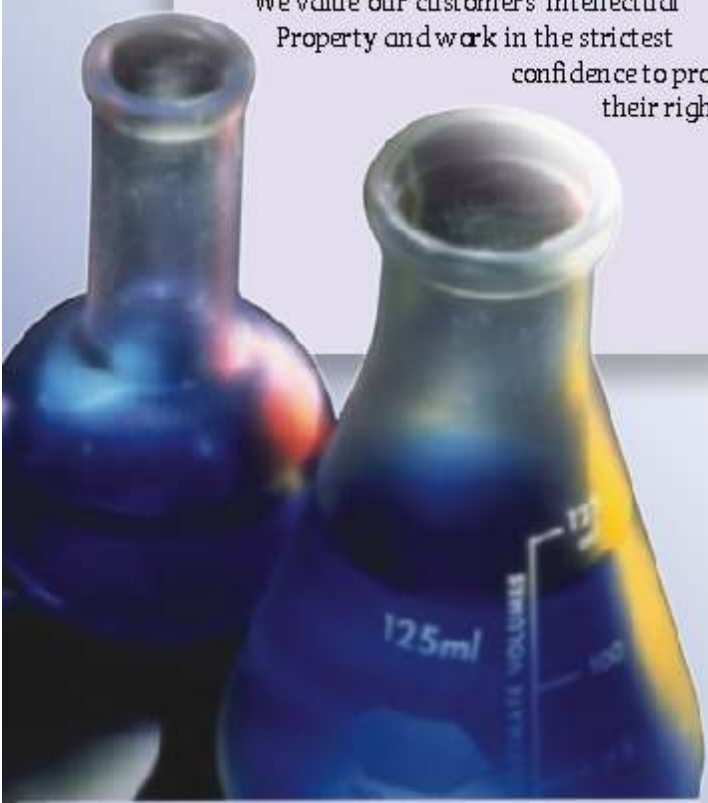
ABOUT THE COMPANY

TCL RESEARCH is part of a US\$ 220 million Group with over 45 years in Chemicals manufacturing and services, operating out of India and South East Asia. We serve world-class companies in Europe and the US. All our companies are world leaders in their business lines, ISO 9000 & ISO 14000 compliant and publicly listed. We have good business relationship with European and US companies, since 1975.

TCL RESEARCH has extensive experience in Applied Research, Laboratory-scale Synthesis, Development of effective Manufacturing Processes, Pilot Plant Studies, Scale-up and Manufacturing. We have excellent Laboratory, Pilot Plants, Manufacturing Facilities and Scientists backed by world-class systems. Our strong competence combined with a high value system has earned us a long-term business relationship with leading European companies. We have state-of-the-art Manufacturing and Research facility near Chennai.

TCL RESEARCH offers its knowledge-based Research Support Services to its customers worldwide. We work with a sense of responsibility to the community and environment, with a commitment to safety.

We value our customers' Intellectual Property and work in the strictest confidence to protect their rights.



GROUP COMPANIES

- **THIRUMALAI CHEMICALS LTD.**, manufacturer of Chemicals and Fine Chemicals since 1975.
- **TCL INDUSTRIES (MALAYSIA) SDN. BHD.**, manufacturer of Maleic Anhydride.
- **CHEMIDYE MANUFACTURING CO. PVT. LTD.**, manufacturer of Fine / Specialty Chemicals specifically Di-Ethyl Phthalate and Phthalimide.
- **ULTRAMARINE & PIGMENTS LTD. (UPL)**, manufacturer of Inorganic Pigments and Organic Surfactants.
- **LAPIZ DIGITAL SERVICES**, provider of Patent Search, Analysis Abstracting and Indexing in Life Science, Pharma Chemistry, Biochemistry.

OUR MISSION

TCL RESEARCH aims to be a leader in the domain of its business, by providing world-class Research Support to all its clients across the globe and fulfilling all their expectations, with an assurance to protect the IPR and Confidentiality of Clients' Business activities.

OUR LINE OF BUSINESS

TCL RESEARCH offers services to meet customers' specific needs that help them to be more successful in their businesses. We offer experienced, cost effective services to complement customer's efforts in Product Development, Process Development, Scale-up and Manufacture.

Analytical Services

TCL RESEARCH combines the best analytical techniques, technology and expertise. We offer Analytical Services for Chemicals, Advanced Intermediates, Active Pharmaceutical Ingredients, Finished Dosages, Food additives, Fine chemicals and more.

- Pharmacopoeia Analysis
- Analytical Method Development
- Validation of Analytical Methods
- Impurity Profiling
- Forced Degradation Studies
- Dissolution Profiling
- Assay Development
- Chiral Analysis
- Characterization of Compounds
- Heavy Metals / Trace Metal Analysis
- Particle Size Analysis
- Wet Chemical Analysis

Bio Process Development

TCL RESEARCH has a proven experience in the areas of microbial fermentation, media optimization, whole cell immobilization, bio-catalysis, and bio-transformation. **TCL RESEARCH** has scaled up a bio-process and bio-transformation step, from lab scale to pilot scale for the manufacture of a chiral product.

The range of services includes:

- Characterization of strain,
- Strain improvement
- Media formulation & optimization
- Bioprocess development
- Process optimization
- Biomass production
- Immobilization
- Bioconversion
- Scale-up of bioprocess

Data Analysis and Management

TCL RESEARCH services are targeted on the committed quality, consistency, cost-effectiveness and completeness of the data. Our range of services include:

- Database Design
- Document Management
- Data Capture
- Statistical Analysis
- Report Writing

Range of Services

Process Development and Optimisation

TCL RESEARCH has developed and optimized several processes at kilo levels and transferred for commercial manufacturing. Process development and optimisation services include:

- Yield Improvement
- Reducing the Process Steps / Cycle time.
- Reducing the Impurity Level
- Elimination of Hazardous Material in the Process
- Development of Process suitable for Commercial Manufacturing.
- Process Hazard Analysis
- Scale-up

Laboratory Synthesis

TCL RESEARCH delivers laboratory synthesis services to complement and support your internal research and development programs. We provide chemistry support services for the synthesis of target compounds, reference compounds, starting materials, intermediates, specialized reagents, and other compounds of interest. Our chemists work in a well-equipped facility with ready access to literature / reaction databases and literature retrieval services.

Some examples of our services:

- Discover new routes to target compounds.
- Optimize process conditions.
- Synthetic route design and optimization
- Re-synthesis of existing molecules in a new route.
- Preparation of starting materials, intermediates, and final targets.
- Preparation of reference compounds.
- Small-volume (mg-kg) manufacturing
- Chiral Synthesis / Enantiomeric resolution



KEY STRENGTHS

- Integrity
- Experience
- World Class Systems
- Focus on eco-compliance
- Technological Competence
- Good Manufacturing capabilities
- Process Development
- Scale-up
- Project Management
- Trustworthy Relationship with International Partners

TCL Research has all the modern analytical instruments, laboratory equipment, hardware and software – to partner you all the way, in some of the most complex and specific research support services.

We offer a competitive, yet fully operational Research Facility, manned by highly competent, domain-knowledge intensive research scientists, supported by an impressive array of state-of-the-art infrastructure.

You can leverage our long experience, research expertise, process capabilities, business dynamism and commitment to protect customers' interests.

CHEMISTRY CAPABILITIES

- Chiral Synthesis
- Bio Transformation
- Hydrogenation
- Halogenation
- Epoxidation
- Ozonation
- Diels Alder Reaction
- Esterification
- Electrolytic Reductions
- Isomerisation
- Sulphonation
- High Pressure Hydration
- High Temperature Oxidation.

Contact:

G.Subramanian / M.A. Viswanath
Global Business Development Cell



TCL RESEARCH

(A Division of Thirumalai Chemicals Ltd)

25-B, SIPCOT Industrial Complex, Ranipet, Tamil Nadu, INDIA
Web site: www.tclresearch.com / E-mail: mail@tclresearch.com
Ph: +91-4172-244441, 2, 6 / Fax: +91-4172 244308