



Proposal

Synthetic Chemistry and Drug Discovery Lab

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Proposed Synthetic Laboratory at the Department of Chemistry, Faculty of Science, University of Colombo

Introduction

The Department of Chemistry at the Faculty of Science, University of Colombo, is pleased to submit this proposal for a fully equipped synthetic laboratory. Designing and synthesizing new molecules is a fundamental aspect of chemical sciences. Synthesis of new chemical compounds has immense commercial importance since it's at the core of many industrial products such as pharmaceuticals, polymers, semiconductor materials and many others. The current facilities at the Department of Chemistry are not adequate to meet current synthetic challenges, particularly the handling of air- and moisture-sensitive material. To remedy this, we propose the development of a fully equipped synthetic laboratory at the Department Chemistry. We fervently believe that this new laboratory will play a central role in the R&D landscape of Sri Lanka, together with the currently existing Centre for Advanced Materials and Devices (CAMD) and the Sri Lanka Pharmaceutical Laboratory (SLPL).

Location

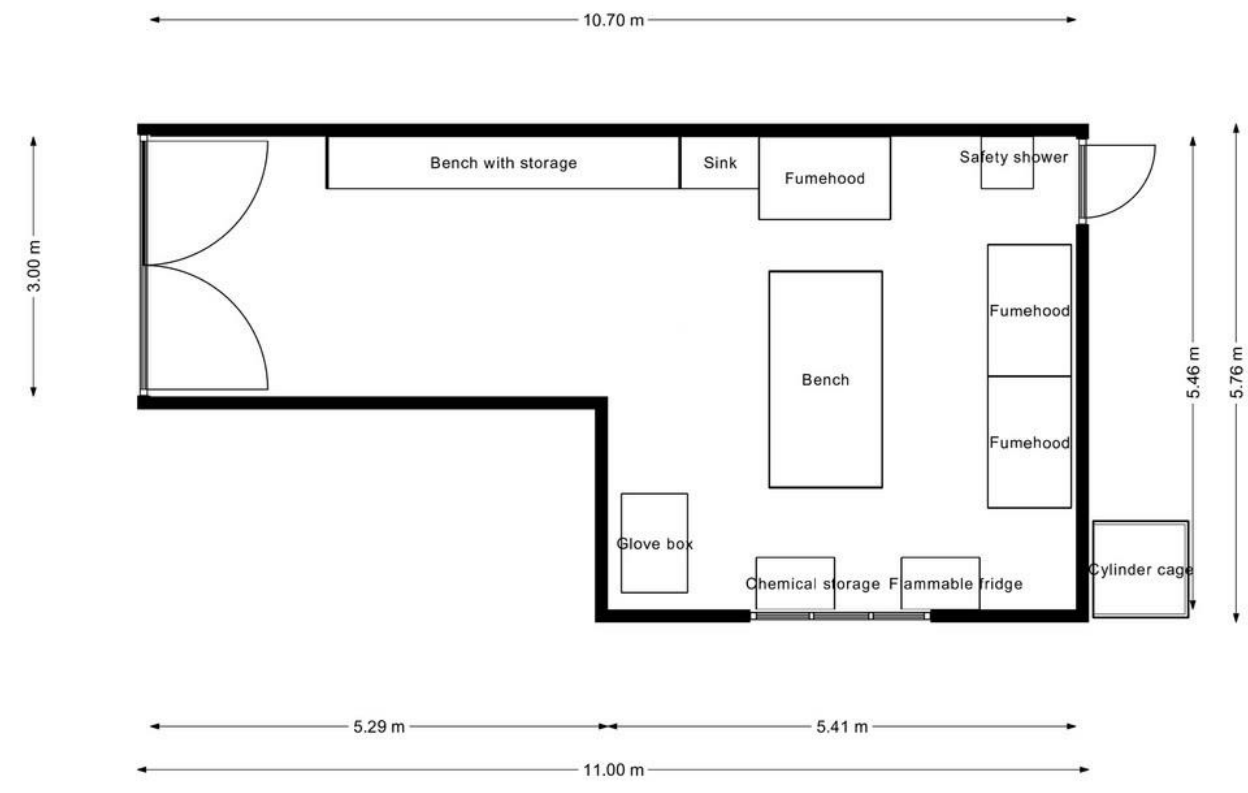
The proposed location is for the laboratory is the old solvent storage room located on the ground floor at the east end of the chemistry department building. This is a sizable room for a fully equipped state of the art synthetic lab. The location is currently in very bad shape and needs a complete overhaul to elevate the space to an international standard laboratory. Considering these circumstances, we are in the process of planning to modernize the laboratory including the utilization of space for advanced synthetic laboratory. The following broad items will be required to uplift the laboratory to a sophisticated synthetic laboratory.

1. Renovation of the laboratory (Civil Works)
2. Laboratory Furniture (As this is an advanced synthetic lab the cleanliness is of utmost important, hence, we are requesting the best furniture with international standard for the lab)
3. Aluminum works (Doors and Windows)
4. Air Conditioning System
5. Electrical and other items (UPS system, etc)

We would like to pay your attention to the fact that we have developed the department through various avenues to cater for advanced research in different areas such as materials science, biotechnology, computational chemistry, etc. however we are in the process of looking for avenues to develop a fully fledged synthetic chemistry laboratory. There is strong section of academic staff who engaged with synthetic organic chemistry and drug discovery research in the Department of Chemistry, Faculty of Science. This facility will also benefit the other academic staff members for their research. In addition, a sophisticated laboratory will bring the fame to

the Faculty of Science, University of Colombo. This will also strengthen the undergraduate teaching programme due to the strong portfolio in research in the department.

Floor plan



Laboratory design highlights

- **Entry points:** Main entrance – Glass double door with fingerprint gated access. Rear entrance to function as fire escape.
- **Exhaust system:** The laboratory is to be equipped with proper ventilation and exhausts ducts to which fume-hoods and gloveboxes would be connected.
- **Fume-hoods:** Three Standard 5 ft x 3 ft fume-hoods. When operational each fume-hood is to contain a fully functional Schlenk line
- **Cylinder cage with built in gas lines:** With an emphasis on safety the pressurized gas cylinders will be housed outside and a gas line system is to carry gases into the laboratory
- **Chemical resistant modular benches:** This design allows for quick reconfiguration and expansion in the future
- **Chemical storage:** Rated cabinets for flammable chemical storage cabinets and “spark-free” refrigerators

Main Equipment and instruments

- **Dual manifold Schlenk lines with vacuum pumps:** The lines would be inside the fume-hoods and rotary-vain or direct-drive vacuum pumps will be connected for vacuum and gas lines from the cylinder cage for inert gases.
- **Single station glovebox with purification catalyst bed:** This would aid in storage and weighing of air-sensitive material prior to carrying out reactions on the Schlenk line. The glovebox atmosphere is expected to have sub ppm levels of oxygen and water.
- **Solvent purification system:** This would provide the anhydrous solvents required for air- and moisture-sensitive chemistry. This system would also enhance safety over the use of traditional sodium stills.
- **Top-loaded and analytical balances:** Standard balances for weighing chemicals
- **Hotplate stirrers with temperature controller:** These will allow for elevated temperature reactions to be carried out safely.

Approximate Budget Estimate

A.) Basic infrastructure budget

Item	Estimated cost (USD)
Laboratory upgrade (Doors, windows, electricals, new flooring, walls etc.)	35000
Ventilation system with ducts/exhaust fans/Cylinder cage with gas lines	10000
Chemical resistant benches and regular storage cabinet	25000
Flammable storage cabinets, "spark-free" fridge	5000
Total	75000

B.) Equipment budget

Item	Estimated cost (USD)
Five port, dual manifold Schlenk line equipped with direct-drive or rotary-vain vacuum pump	20000
Single station glovebox with purification catalyst bed	30000
Solvent purification system	30000
Balances, ovens, hotplate stirrers etc.	15000
Glassware items required for air-sensitive chemistry	5000
Total	100000