



DEPARTMENT OF CHEMICAL ENGINEERING
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI – 600 036, INDIA

Raghunathan Rengaswamy
Professor

Tuesday, May 06, 2014

Ref: CH1415001NFSCRAGN

Dt. 06 May 2014

Due Date: 19 May 2014

1. Quotations are invited in duplicate for the items shown overleaf (in Annexure I). The quotations duly sealed and super scribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach on or before the due date mentioned above.
2. The quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
3. The total cost of the equipment in terms of CIP Chennai should be clearly mentioned.
4. Terms of warranty and guarantee should be explicitly mentioned.
5. Packing and delivery charges, customs and clearance duty should be clearly stated.
6. Goods shall not be supplied without an official supply order.
7. Local firms: Quotations should be for free delivery to this institute. If quotations for ex-godown delivery charges should be indicated separately.
8. Firms outside Chennai: Quotations should be for F.O.R. Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If ex-godown, packing, forwarding and freight charges must be indicated.
9. The rate of sales / general taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for sales / general taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax (CST) applicable to non-government educational institutions run with no profit motive for which a concession sales tax certificate will be issued at the time of final settlement of the bill.
10. Payment : Specify the mode of payment and if advanced payment has to be made. Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.



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11. IIT Madras is exempt from payment of excise duty and is eligible for concessional rate of customs duty. Necessary certificate will be issued on demand.

12. IIT Madras has the right to accept the whole or any part of the tender or portion of the quantity offered or reject it in full without assigning any reason.

13. In case of any queries/clarifications, please contact Prof. Raghunathan Rengaswamy, IIT Madras, Chennai, Ph. +91-44-2257 4169, E-mail: raghur@iitm.ac.in.

14. The sealed quotation may be sent to

Prof. Raghunathan Rengaswamy
Department of Chemical Engineering
IIT Madras, Chennai – 600036
Tamilnadu, India



**DEPARTMENT OF CHEMICAL ENGINEERING
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Annexure I

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Quotations are invited for a bench-top soft lithography setup to be installed at IIT Madras for reproducible synthesis of microfluidic device designs. Major functionality requirements are listed below:

1. An easy to setup micro-fabrication facility.
2. Clean room should not be required.
3. Designs for micro-channel structures remain as autonomous as possible.
4. Easy protocols for handling the equipment.
5. Equipment will not have a footprint greater than 3 m² so that it can be installed in a standard chemical hood.
6. Device resolution needs to be as high as what one would typically get from a conventional clean room facility.
7. Should work as an integrated system and not as piecemeal components.



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Detailed product specifications:

1. A Photolithography Module (for creation of our own molds)

a) Programmable Hot Plate	<ul style="list-style-type: none">• Overall dimensions: 160 x 85 x 270 mm	<ul style="list-style-type: none">• Plate surface needs to be with excellent temperature uniformity:• Chemical resistant plate, easy to clean.• Maximum safety ensured• Large temperature range: suitable for both soft baking and hard baking.
b) Spin Coater	<ul style="list-style-type: none">• Dimensions: 275x240x450 mm• Process chamber max diameter: 202 mm• Should store up to 50 programs with 1-99 steps	<ul style="list-style-type: none">• Should be compatible with wafers up to 6"Ø, or 4x4" glass slides
c) Dry Sealed Vane Vacuum Pump	<ul style="list-style-type: none">• Ext. dimensions: 239x144x142 mm• Suction needs to be around 3 m³/h (50 Hz)	<ul style="list-style-type: none">• Same pump to be compatible with being used for PDMS Molding also
d) UV Exposure System	<ul style="list-style-type: none">• Overall dimensions: 270 x 270 x 270 mm• Resolution should be less than 3µm• UV Source lifetime should be at least 10000 hours	<ul style="list-style-type: none">• Requirement: Compact exposure system for wafers up to 4 inches• Should be suitable for all types of photoresists and photo masks



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2. PDMS Molding (Duplication of PDMS Molds)

a) Plasma System	<ul style="list-style-type: none"> • Dimensions: 425x450x185 mm • Vacuum chamber: $\varnothing=105$ mm , Length= 300 mm Volume = around 2.6 liters • Maximum Plasma power needs to be 100 W • 2 independent gas channels required 	<ul style="list-style-type: none"> • Should be able to process many samples simultaneously
b) Laboratory Oven	<ul style="list-style-type: none"> • Maximum Capacity needs to be 18 Liters • Ext. dimensions: 500x390x320 mm • Int. dimensions: 300x300x200 mm 	<ul style="list-style-type: none"> • Rapid curing of PDMS Process wafers simultaneously required
c) Dessicator	<ul style="list-style-type: none"> • Internal \varnothing: 150 mm • Vacuum connection valve with controlled air inlet required 	<ul style="list-style-type: none"> • We need to have a crystal clear view of the PDMS degassing process • Needs to be compatible with 4" Petri dishes
d) Spin Coater	<ul style="list-style-type: none"> • Dimensions: 275x240x450 mm • Process chamber maximum diameter: 202 mm • Should be having Disposable internal protection (plastic liners) 	<ul style="list-style-type: none"> • Should be compatible with wafers up to 6" \varnothing, or 4x4" glass slides • Easy centering: The equipment should be able to avoid potential breaking and/or spin speed limitation due to misbalance