

Indian Institute of Technology, Kanpur
Centre for Environmental Science and Engineering

Tender Enquiry No.: [CESE/PCI/2018/10](#)

ITEM: Pressure Chamber for PCI with heating

A) Technical Specifications

We require a pressure chamber with temperature control (heating and cooling facility) for the determination of pressure -composition-isotherms (PCI), along with other accessories and items as specified in this document.

The specifications of the chamber can be found in Table 1a. The existing furnace should be made operational for heating (requirements of repair can be found in Table 1b). Specifications for cooling control unit are available in table 1c). Accessories and other items can be found in table 2.

Table 1a) Specifications of high Pressure PCI chamber

Specifications of the PCI chamber	
Constructed Cell	Stainless Steel, seamless construction
Vacuum	$>10^{-3}$ Torr.
Pressure	Upto 200 bar. The chamber should withstand 200 bar pressure.
Ports, Valves & connectors	Separate ports and valves for gas inlet and vacuum connection. (With additional one or two ports).
Temperature	Should be able to operate in the temperature regime: -196°C to 400°C .
Gases	The atmosphere in the chamber can be any of the following gases: Ar, H ₂ , N ₂ , He, etc.
Temperature measurement	Ability to measure sample temperature (with type K thermocouple or external optical pyrometer focused via a window in the cell)
Make and model of the PCI unit for which the chamber is required	Model LPB, 2 Channel (S/N 0356Q), Advanced Materials Corporation, Pittsburg, USA

Table 1b) Specifications of heating furnace

Repair of pre-existing furnace with specifications as below to make if functional for heating	
Furnace Model and make	Stainless Steel
Temperature measurement	Ability to measure sample temperature (with type K thermocouple)
Temperature control	Through pre installed OMEGA PID (in the AMC Unit) temperature controllers.
Data and control	The furnace is controlled by AMC PCI unit.

Table 1c) Specifications of cooling control unit (liquid Nitrogen circulation based cooling system)

Temperature Range Required	-196°C to 25°C
Flow rate	Adjustable from 0.01mBar to 270 mBar (by potmeter on pump)
Maximum working pressure	<300 mbar
Reaction time	ab. 2 minutes for cooling down the fill line (with 2 meters fill line)
Power connection	230V AC with supplied power supply
Power consumption	average 5 Watts, during pumping 50 watts
System includes	Dewar, pump, fill line 2.00 m, phase separator, power supply, cables, 2 level sensors

Table 2) Accessories/spares/other items

Name	Specifications	Quantity
High Pressure multi inlet reaction chamber	Hydrothermal Synthesis Autoclave Reactor with High pressure digestion tank (Volume = 200ml, Pressure limit =200 bar, temperature limit 200°C)	1

B) Terms and conditions

Warranty

Two year onsite comprehensive warranty required (from date of successful installation at IITK).

Installation

The price should be inclusive of installation on site with full functionality.

Delivery

- 10 weeks maximum from the date of purchase order. For any extension in the delivery date, permission should be sought with valid reasons.

Payment & Taxes: As per IIT Kanpur Norms.

Concessional rate of GST (@ 5%) will be applicable with reference to Notification No. 45/2017 Central Tax (Rate) dated 14/11/2017. IITK will provide relevant certificate for this purpose. On import items for research purpose presently the GST applicable is 0% (Zero percent). DSIR certificate along with CDEC will be provided by IITK to vendor for availing concession. *Vendor should use these GST rates in their quotation.*

Customs/Excise Duty

The institute is exempted partially from payment of customs duty (The rate applicable will be @ 5.50%). Under notification 51/96 and a road permit will be provided (wherever applicable). It is to be noted that the Concessional Form 'C/D' have been abolished w. e. f. Apr 01, 2007.

Spares

All required spares for operation for two years have to be provided.

Certificate of satisfactory performance

The company should provide certificate of satisfactory installation and performance from 3 (three) I.I.T. Kanpur customers, to whom a similar product has been supplied. Additional certificates may be provided from other I.I.Ts and reputed scientific organizations like BARC or CSIR labs.

Details of Quotation

- Two separate bids, Technical and Financial bid to be submitted in separate sealed envelopes. Write enquiry number, item name and last date of tender on the envelope.
- Quotation should be valid for 90 days. All quotes should be in Indian Rupees (INR) with total cost (including taxes as applicable). Pricing for individual components and tasks should be listed.
- The main envelope should clearly mention the Tender Number at the top.
- Quotation should carry proper certifications like proprietary certificate, authorization certificate from manufacturer, etc.
- Maximum educational discount should be offered wherever applicable (i.e. pricing should be for educational institute).
- The Quote should cover insurance and transport up to Kanpur.
- The indenter reserves the right to withhold placement of final order. The right to reject all or any of the quotations and to split up the requirements or relax any or all of the above conditions without assigning any reason is reserved.
- **Quote: Quote should reach the address as below by 11 June 2018. Extended date is 22 June 2108.**

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