

## Technical Specification of Gas chromatography (GC)

Gas Chromatograph configured with capillary injector port, Flame ionization detector, automated liquid injector should be quote as per following specifications.

<b>Instrument Performance</b>	<ul style="list-style-type: none"> <li>• Must be able to configurable at least 3 inlet, 4 detectors</li> <li>• Retention time repeatability should be &lt; 0.0008 min and Peak area repeatability &lt; 1 % RSD</li> <li>• Integrated leak check function allows you to easily check for leaks and extensive self-diagnosis function with safety features</li> <li>• Should perform automated baseline check and user defined system suitability test in a sequence.</li> </ul>
<b>Column Oven</b>	<ul style="list-style-type: none"> <li>• Provision to install two or more columns</li> <li>• Operating temp range of oven from near ambient to 450°C</li> <li>• Oven temperature ramp rate of oven should be 120°C or better</li> <li>• Possible to program 15 temp ramps or better</li> <li>• Oven cool down: 450 to 50 °C in 4 minutes or better</li> <li>• Should have selectable Column Cooling Rate options from fast to low</li> </ul>
<b>Injectors</b>	<p><b>Capillary Split/Splitless Injector – 1 No.</b></p> <ul style="list-style-type: none"> <li>• Must be able to install up to 3 independently temperature controlled injector units simultaneously</li> <li>• Maximum operating temperature upto 450°C</li> <li>• Automated flow control modules with Pressure set points adjustable in increments of 0.001 psi, settable upto 150psi</li> <li>• Split ratio upto 7000:1 and suitable for all capillary column from 50um to 530um.</li> <li>• Must consist of at least 3 pressure programming methods, constant pressure, Constant flow.</li> <li>• Number of flow programming steps up to 5 or better</li> </ul>
<b>Detector</b>	<p><b>Flame Ionization Detector (FID) – 1 No.</b></p> <ul style="list-style-type: none"> <li>• Minimum detection level should be around 1.2pgC/s for dodecane or equivalent compound</li> <li>• Temperature range of up to 450°C</li> <li>• Able to automatically control up to 3 channels of gas, i.e. H2, make-up and Zero grade Air</li> <li>• Must have an acquisition time of 2ms (500Hz) or better</li> <li>• Must provide fast flame out detection and efficient automatic re-ignition</li> <li>• Dynamic range should be up to 10<sup>7</sup></li> </ul>
<b>Auto sampler &amp; Auto liquid</b>	<ul style="list-style-type: none"> <li>• Auto sampler should support 15 vials or more for liquid injection</li> <li>• should able to inject sample volume 1 to 80% of syringe capacity</li> </ul>

<b>Injector</b>	<ul style="list-style-type: none"> <li>Standards should be provided.</li> </ul>
<b>Capillary Columns</b>	<ul style="list-style-type: none"> <li>30m Column for Organic Compound analysis – 2 numbers</li> <li>Columns for Chiral Compound analysis – 6 numbers (30 – 50m; I.D. 25-35 mm or similar size, chiral stationary phase should be similar/equivalent to <math>\beta</math>DEXm, <math>\beta</math>DEXsm, <math>\beta</math>DEXse, <math>\beta</math>DEXsp, <math>\beta</math>DEXsa, <math>\beta</math>DEXcst). All the 6 chiral columns must have different chiral stationary phases.</li> </ul>
<b>Software</b>	<ul style="list-style-type: none"> <li>Suitable software for instrument control for all mentioned modules to be quoted</li> <li>Acquisition of sample data and qualitative &amp; quantitative analysis of acquired data.</li> <li>Instrument acquisition, data analysis and reporting should have been built based on the Retention indices through automated features.</li> </ul>
<b>Accessories required</b>	<ul style="list-style-type: none"> <li>Gas cylinders for Carrier gas (N<sub>2</sub>, He) and detector gas (H<sub>2</sub>, Zero Air) should be provided</li> <li>Two stage Cylinder Regulator with Brass Chrome plated body with S.S. Diaphragm for Carrier gas and Detector gas, should be included</li> <li>Suitable Gas Purification &amp; Control Panel with pressure Regulator for Carrier gas and Detector gas should be provided</li> </ul>
<b>Warranty</b>	<ul style="list-style-type: none"> <li>3 year from the date of installation or supply</li> </ul>
<b>Training</b>	<ul style="list-style-type: none"> <li>Vendor shall depute his trained team to install and commission the hardware offered, complete in all respects.</li> <li>Should provide instrument operation and application training for 5 days</li> </ul>

### Vendor Eligibility Criteria:

- The same model of the instrument must have been supplied to other or same (IIT Madras) kind of National Institutions such as IITs, IISERs or CSIR Labs.
- AMC must be quoted as optional (after 3 years)
- 21CFR part 11 compliance ready, CE Certificate, or also database for the instrument software must be provided.
- Installation report and previous POs must be supplied.