Date: 04/10/2019

# Addendum 2

The Pre – Bid Meeting was held on 30/09/2019 at 3.00 p.m. in the CCMT meeting room, NITK Surathkal for the purchase of "**Raman spectrometer",** (**Tender Notification No**: NITK/CRF/AS/Raman/04, **Dated:** 28/08/2019)**.** The following queries were discussed & the Reply/Clarification given to the prospective bidders.

## Queries & Reply/Clarification

| S.No. | NITK Tendered Specifications | Changes Requested by the vendor | Justification from the vendor | NITK's response to the request. |
|---|---|---|---|---|
| 1. | **10X, 50X and 100X objective.** | 50XLWD Objective | In our experience we have seen customers are using 50XLWD Objective, so we suggest that this could be considered in place of standard 50X Objective. | Committee decided to stick to the original specs. |
| | **grating specification you have asked 2400 lines/mm and 1200 lines/mm.** | As we have 800mm Focal length spectrometer we request the specification could be modified as<br>1800/2400, 600/1200. | The gratings proposed in the specifications are for a small spectrometer like 250mm Focal length, these gratings are required to achieve the specification given for the Spectral Resolution. | Committee decided to modify it as **grating specification 1800 lines/mm and 600 lines/mm or better.** |
| | **wavelength range specification: 100 to 4000 $cm^{-1}$ wavenumbers** | we request you to change the wavenumber from 50$cm^{-1}$. | As this equipment will be for Central Facility, we highly recommended to go from 50 wavenumbers.<br>For the basic routine analyses 100 $cm^{-1}$ upwards is sufficient for identification and characterisation.<br>However, there are certain materials which exhibit spectral features below 100 $cm^{-1}$, and being able to measure | Committee decided to modify it as **wavelength range specification: 100 to 4000 $cm^{-1}$ wavenumbers or better.** |

PRITAM RAMESH BANSOD

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Date: 2019.10.04 12:23:15 IST

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| | | | these peaks is vital for full characterisation.<br>Low frequency (From 50cm$^{-1}$) features is the only method to distinguish different materials. Examples where low frequency analysis is important include:<br>• Polymorphs of pharmaceutical materials<br>• Crystal lattice modes<br>• Longitudinal acoustic modes in polymers<br>• Certain metal oxide and halide species<br>• Semiconductor superlattices | |
| | Peltier cooling down to **-70°C** (better will be preferred)<br>Peak QE > 55%<br>Pixel 16 x 16 µm (better will be preferred)<br>USB interface | Our cooling temperature is -60 deg C and 26 micron pixels. | We have installed more than 80 Raman systems with CCD cooling of -60 deg C. | Committee decided to modify it as **CCD cooling temperature should be -60 deg C or better; Peak QE > 48%;**<br>**16 x 16 µm pixels or better.** |
| | **532 nm laser with 50 mW power and 785 nm laser with 250 mW power** | ≥100 mW or better for both lasers. | For the most common applications, researchers use 100mW power for 532nm and 785nm lasers. | For fiber optic based system there will possibly be power loss between laser head and sample. Hence, Committee decided to stick to the original specs as we had already specified that, **'the output intensity of all lasers controllable to change the intensity continuously from 0 to the maximum in minimum possible increment so as to minimize any issue during sample burning or heating in low step sizes of < 1% or in steps using Neutral Density Filters'.** |

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| | **neutral density filters: minimum 16 steps or higher** | either 9 filters or more or remove the number of filters. | We offer neutral density filter with 9 steps (100%, 50%, 25%, 10%, 5%, 3%, 1%, 0.1% and 0.01%) | Committee decided to modify it as **neutral density filters: 9 filters or more** |
| | **Warranty period: 3 years** | | We can offer 3 years warranty on the system except Lasers. One-year warranty will be given for Lasers. | Committee decided to stick to the warranty period as specified earlier. |
| 2. | Laser (785nm), Diode Laser, Polarization ready, 250mW power OR higher at laser output | Laser (785nm), Diode Laser, Polarization ready, 120mW power OR higher at laser output | For 785 nm laser, our principals WITec offer a 125mW output power solid state DPSS laser and hope this should be acceptable. With high transmission using fibers a higher power laser is not considered essential for Raman. | For fiber optic based system there will possibly be power loss between laser head and sample. Hence, Committee decided to stick to the original specs as we had already specified that, **'the output intensity of all lasers controllable to change the intensity continuously from 0 to the maximum in minimum possible increment so as to minimize any issue during sample burning or heating in low step sizes of < 1% or in steps using Neutral Density Filters'.** |
| | **Detector CCD**<br>Minimal 1024 x 200 pixel format<br>Peltier cooling down to **-70°C** (better will be preferred)<br>Peak QE > 55%<br>Pixel 16 x 16 µm (better will be preferred)<br>USB interface | Detector CCD<br>Minimal 1024 x 200 pixel format<br>Peltier cooling down to -60°C (better will be preferred)<br>Peak QE > 55%<br>Pixel 16 x 16 µm (better will be preferred)<br>USB Interface | | Committee decided to modify it as **CCD cooling temperature should be -60 deg C or better; Peak QE > 48%;**<br>**16 x 16 µm pixels or better.** |
| 3. | XYZ stage travel range – 100mmx 100mmx25mm<br>Step size: 100nm in XY and 20nm in Z | 112mmx76mmx25mm<br>50nm in XY and 8nm in Z | | Committee decided to modify it as '**112mmx76mmx25mm**<br>**50nm in XY and 8nm in Z'** |
| | CCD Peak QE >55%<br>Pixel size 16µ x 16µ or better | 48%<br>26µ x 26µ | | Committee decided to modify it as **CCD cooling temperature should be -60 deg C or better; Peak QE > 48%;**<br>**16 x 16 µm pixels or better.** |

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| | Warranty : three years from date of Installation | 37 months form date of shipment or 36 months form date of shipment which ever occurs earlier<br><br>Laser warranty – 1 year or 3000 working hours whichever occurs earlier | | The warranty period as specified earlier, for all the items in the bid. |
| | Polarization Ready Laser | | Do you want to procure polarization kit in future or you want to procure now itself | Committee decided to procure in future. |
| | **Regarding PBG** | | NITK wants PBG before LC while we issue PBG after installation | As per the tender document. |

It is decided to extend the Bid submission date by four weeks after displaying Addendum 2

**Last date for request tender document** : 31/10/2019, before 3.00 p. m.
**Last date for Bid submission** : 31/10/2019, before 4.00 p. m.
**Bid opening date(tentative)** : 05/11/2019 @ 3.00 p.m.

Sd/-
Buyer
(Prof. Anandhan Srinivasan)

Sd/-
Chairman
Central Research Facility
NITK, Surathkal