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MATERIALS MANAGEMENT DIVISION
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Technical specifications

Upgrade of existing TCSPC Lifetime facility for NIR Range:

1. Hybrid picosecond photon detection module
 - (a) Wavelength range from 400 – 850 nm or larger than this window
 - (b) Dark counts < 500 cps
 - (c) Transit time spread ~ 150 ps or shorter
 - (d) Thermoelectric temperature regulator
 - (e) Overload protection
 - (f) Internal high voltage and bias generator
 - (g) GHz pre-amplifier
 - (h) Must include HPPD-Ci controller module with NIM and TTL compatible outputs
 - (i) Interlock connector
 - (j) USB control interface
2. Time-domain monochromator
 - (a) Vis_NIR: 400 – 1600 nm
 - (b) Includes motorised wavelength and slit control
 - (c) Safety shutter
 - (d) F-link interface
3. NIR photomultiplier
 - (a) Wavelength range 950-1700 nm
 - (b) Transit time spread ~ 500ps or shorter
 - (c) Darkcounts < 300kcps
 - (d) Air-cooled housing with power supply and optics
 - (e) CFD-2G-B close-coupled GHz amplifier
 - (f) Discriminator and all needed cables
4. Baseplate extension
5. Delta-diode controller
 - (a) Drive cables
 - (b) USB cable
 - (c) Lens adjustment tool
 - (d) Interlock-plug
 - (e) Control panel software
 - (f) Keys and IEC power cord
 - (g) Repetition rate from 1 shot to 100 MHz (subject to attached diode)

6. Pulsed laser diode
 - (a) Peak wavelength 375nm +/- 10 nm
 - (b) Active temperature control
 - (c) With diode conditioner
 - (d) Repetition rate upto 80 MHz
7. Pulsed laser diode
 - (a) Peak wavelength 635nm +/- 10 nm
 - (b) Active temperature control
 - (c) With diode conditioner
 - (d) Repetition rate upto 80 MHz
8. 10 dB attenuator x 2
9. Simultaneous Fluorescence and UV-Vis-Nir spectrophotometer
 - (a) Xenon lamp illuminator
 - (b) Excitation monochromator with adjustable slits
 - (c) Reference photo-diode
 - (d) Excitation filterwheel with two order sorting longpass filters
 - (e) Two ND filter of 0.5 and 1.0 OD
 - (f) Standard cuvette holder
 - (g) Quartz cuvette X 4 (1 mm path length)
 - (h) Imaging spectrograph
 - (i) CCD detector (250 nm to 1100 nm)
 - (j) Adjustable emission slits
 - (k) Software for operation and data collection
 - (l) Sample holder with 360 degree variable angle goniometer
 - (m) Solid sample accessory for universal sample holder(thin-films, cover lips, paper, PET
 - (n) Powder sample accessory