PR : 1000017912

Rfx : 6100000694

Technical specifications for Super Resolution Microscope

Technical specifications for SIM or Multipoint Array scanning Super Resolution system :

A. SIM/ Multi Point Array Scanning based Super-Resolution Module

a. The system should be based on SIM/ Multi point 2-D Array scanning Super Resolution technique with capability of X-Y resolution of ~ 100 – 130nm or better.

b. Capable to resolve in Z: ~300 - 350 nm or better.

c. Temporal Resolution of the system should be 200 fps (minimum) @ 2msec exposure with 1024 x 1024 resolution enabling the study of dynamic interactions in Living cells. Also, the system should reach the maximum speed of 1000 fps @ 1024x192 Pixel for capturing the very fast dynamic interaction.

d. The system should be capable of at least two colours simultaneous imaging with two sCMOS cameras of more than 90% Q.E.

e. The System should have a selectable pin hole sizes; 10 - 64um, to match pin hole size to microscope objective.

f. The system should not use any intermediate magnification changer for achieving the desired resolution.

g. System should have observation modes as 2D and 3D mode along with two colours simultaneous imaging. All the changeover between different modes should be automated. The acquired Super Resolution Data should be quantifiable in terms of intensity of individual SR Images.

h. System should be capable of performing Multi-colour Imaging with "at least two-colours Simultaneous SR Imaging" without loss of resolution in any spectral region from 405 - 640 nm.

i. System should be capable to perform Long time Live cell Imaging experiments in super resolution. The System should have multi point 2-D Array for scanning all images with the same scanning beams to minimise image to image variations.

B. Laser unit

- The SIM/Multi Point Array Scanning Super Resolution System should be quoted with laser combiner having 405nm, 488nm, 561nm, 640 or 642nm with High Power and should be controllable with the same software been used for the Localization Based Super Resolution technique or Confocal for the purpose of correlative study on the same field.

- The lasers should have appropriate power for SIM/Multi Point Array Scanning system.

C. Detection system for SIM/ Multi Point Array Scanning method(dual cameras)

Detection for Super-Resolution modules should be based on Scientific CMOS camera having effective no. of pixel 2k x 2k or better with Pixel Size of 6.5 microns x 6.5 microns and it should be capable of acquiring at a max speed of 89- 95fps or better @ full frame, Q.E, should be more than 90%. Readout noise should be 1.0 e- or better with full well capacity should be 30,000 electron or better or having similar output with justification will be considered for Super Resolution modules. Optimal FOV of 80 μm X 80μm or better using 60X or 63X/1.40 oil objective or equivalent objective should be available.

D. <u>Controlling and Analysis Software</u>

Should meet the following parameters and requirements:

- The SIM/Multi Point Array Scanning Super Resolution System should be controllable with the same software been used for **(**Localization Based Super Resolution technique or Confocal) for the purpose of correlative study on the same field.

E. Compatibility
   a. The entire SIM/Multi Point Array Scanning Super Resolution System must be compatible with Localization Based Super Resolution technique or Confocal a SIM/Multi Point Array Scanning Super Resolution System**.**

F. Power back up for the entire system
   a. A suitable ONLINE UPS system (with back up for 30 min and with voltage stabilization capability) for trouble-free operation for the complete system

G. CMC
   a.. Warranty should start from the day of installation + 2 yrs of CMC + 2 yrs of AMC
   b. In case of downtime, the system should be attended within 48 hours of complaint.

   Note- Bidders must mention clearly the Room dimension/conditions required to install the above set-up.