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MATERIALS MANAGEMENT DIVISION
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PR No.1000020806

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“Coupled Laser Beam Induced Current & PL Imaging System (LBIC & PL)”

Application domain: Solar Cells

1. Component details & Specifications

1.1) Microscope Design: Upright

Optical System: Colour Corrected Infinity Optical System

Observation: Digital camera-based system

1.2) Sample Stage: Stepper motor controlled 120x120mm

1.3) Turret: Motorized positioning and 4 slots for keeping Objective Lenses

**1.4) Objectives: 5x, 10x, 20x, 50 x LWD objectives Long working distance objective: 5X
Plan apochromatic type 42mm Working distance Tube Length: 200 mm**

**1.5) FOCUS: Motorized Stepper motor-controlled Illumination for imaging: Top, Bottom,
and Co- Axial HB-LED Based Illumination Control: Continuously Variable**

1.6) Detector unit: High sensitive Hamamatsu 5.8x5.8mm Si photodiode - 2No.s

1.7) 4 Axis Micromanipulator (XYZ & Tilt) XYZ 10 mm & +/- 3 degree

**1.8) Ports: Two standard ports are available for camera and fiber coupling/ Galvano
attachment**

2. Fiber optic cables for Laser coupling

Specifications:

Core Diameter: 50um, 100um, and 1000um Wavelength Range: 190 - 1600nm Connector: SMA 905

Numerical Aperture NA : 0.22

Numerical Aperture (NA) Tolerance ± 0.02 Index of Refraction nd - Core: 1.458

Index of Refraction nd - Cladding : 1.441 Acceptance Angle: 25.4°

Length : 0.5m

3. CAMERA

Specifications:

Cooled 20MP CMOS for Imaging Sensor model: Sony

Quantum efficiency: 84% @535nm Resolution: 5472(H)x3648(V)

Pixel size : 2.40 μ m x 2.40 μ m Sensor size : 15.86mm; 1inch Shutter mode: Rolling

Read noise : <1e-

Cooling: Forced air(Ambient at +25°C): -15°C

Frame rate: 14fps @5472x3648, 53fps @2736x1824, 67fps @1824x1216

Binning: 2x2, 3x3, 4x4 Exposure settings: Auto/Manual Exposure time: 18us - 1hour

Picture format: JPG/PNG/TIFF/DICOM Data interface: USB3.0
Bit depth: 16bit/8bit
Camera size: compatible for the mount
Power supply: 12V

4. LASERS

4.1) 532nm 50mW FIBER OPTIC COUPLED Laser

MLL-III-532-50mW with High output power stability, CW, line width<0.2nm, beam diameter <1.5mm, beam divergence<1.5mrad, PSU-III- FDA (tunable output power via control knob & PC Controlled Operation)

4.2) 405nm 50mW FIBER OPTIC COUPLED Laser

FIBER OPTIC COUPLED MLL-III-405-50mW with High output power stability, CW, line width<2nm, beam diameter <1.5mm, beam divergence<1.5mrad, PSU-III- FDA(tunable output power via control knob & PC Controlled Operation)

4.3) 655nm 50mW FIBER OPTIC COUPLED Laser

FIBER OPTIC COUPLED 655nm-50mW LASER with High output power stability, CW, line width<1nm, beam diameter <2mm, beam divergence<1.5mrad (tunable output power via control knob & PC Controlled Operation)

5. FILTER UNIT

5.1) 532nm Dichroic Filter set cube assembly

25x36mm 532 nm Dichroic laser beamsplitter 532nm, 25mm Dia., OD 6.0 Blocking Filter

5.2) 405nm Dichroic Filter set cube assembly

25x36mm 532 nm Dichroic laser beamsplitter 532nm, 25mm Dia., OD 6.0 Blocking Filter

5.3) 655nm Dichroic Filter set cube assembly

25x36mm 532 nm Dichroic laser beamsplitter 532nm, 25mm Dia., OD 6.0 Blocking Filter

6. SAMPLE CHAMBER

A Gas-purgeable sample chamber

7. WORK STATION

System based on 4x4 feet OPTICAL BREADBOARD with Passive vibration isolation support. Should include: (a) racks, (b) drawers for keeping the essentials (c) electrical plug points (d) space for PC, and (e) appropriate holder for connecting monitor (27 in) and keyboard and mouse (f) Black enclosure. Enclosures consist of acrylic panels (Transparent or Black) and extruded aluminium frame. The front door should be is available with two options: a hinged and sliding door. The enclosure frame is black powder- coated. Two cable ports with end caps are provided on the backside of the enclosure. Mounting clamps should provided for fixing the enclosure with a breadboard.