



INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
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Reference No (PR No. 1000016801)

RFx. No. 6100000724

Technical Specifications:

Reflected light differential interference contrast (DIC) microscope

1	General	The microscope would be primarily used for viewing very thin layers of photosensitive resist, PMMA, very thin (monolayer) flakes of materials like Graphene, MoS ₂ etc scattered on various semiconductor (e.g. Silicon, Gallium Arsenide) and other substrates like sapphire, diamond etc.
2	Basic features	A. The microscope should have brightfield, darkfield and DIC capability with epi-illumination. B. It should be an upright type microscope.
3	Nosepiece/Turret	A. The nosepiece for the objectives should have FIVE or more positions. B. It should have an aperture stop slider
4	Objectives	Parfocal set semi-apochromatic infinity corrected objectives should have numerical apertures (NA) and working distances (WD) at least as follows A. 5x (NA > 0.1) WD > 13mm B. 10x (NA > 0.2) WD ≥ 10mm C. 20x (NA > 0.4) WD ≥ 4mm D. 50x (NA > 0.7) WD ≥ 1mm E. 100x (NA > 0.8) WD ≥ 1mm
4	Transmittance of the objectives	The objectives should have 90% transmittance starting from 350 -700 nm and should not fall below 60% at 1100 nm.
5	DIC	A. Slide in DIC attachment suitable for DIC and polarized light microscopy for the objectives. B. A manually rotatable polarizer-analyzer combination should be provided
6	Illumination	Illumination should be from a Tungsten Halogen lamp (12 V, 100

		W type or better, brightness control) with slots for colour/UV filters, neutral density filters. LED illumination with similar or higher brightness is also acceptable.
7	Eyepiece	<ul style="list-style-type: none"> A. Trinocular eyepiece with Siedentopf design. B. The eyepieces should be 10X widefield with diopter correction and eyecup provided. C. Interpupillary distance should be adjustable (approx 50-75mm) D. The eyepiece should have a cross-hair and scale. E. Adjustable light path Selector lever 100:0 / 0:100.
8	Sample stage, z-height and focusing knobs	<ul style="list-style-type: none"> A. Sample stage should be have a XY motion of 50 mm or better. The stage size should be at least 150mm x 150mm B. The Z-height adjustment should have at least 50 mm stroke with (manual) coarse and fine adjustments.
9	USB microscopy camera	<ul style="list-style-type: none"> A. 5 megapixel (or better) colour sensor with The pixel size of the sensor should be in the range 3-5 microns. B. Compatible Image acquisition software (Windows 10 compatible) with distance and angle measurement capability. C. Realtime features are NOT required. D. The camera should be from the same manufacturer as that of the microscope.
10	Warranty	3 yr manufacturer warranty should be included in cost.