



Department of Metallurgical and Materials Engineering
Indian Institute of Technology, Madras, Chennai – 600 036

Enquiry No.

MM/ASG/PML/2013/006/SOL/IAS

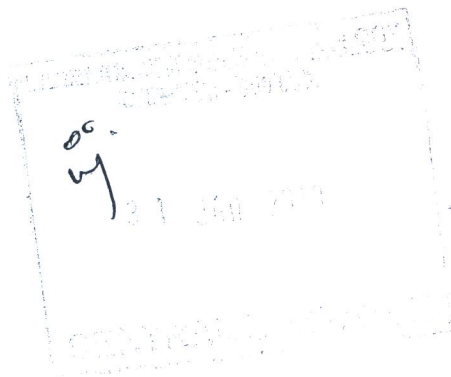
31/1/2013

Due on 15/2/2013

List enclosed

Dear Sirs,

1. Quotations are invited in duplicate for the various items shown below / overleaf / enclosed list. ✓
2. The Quotations duly sealed and superscribed on the envelope with the reference No. and due date, should be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The Quotations should be valid for sixty days from the due date and the period of delivery required should also be clearly indicated.
4. If the item is under DGS & D Rate contract, Rate Contract Number and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price. If so, please send copy of the R.C. (Please note that we are not Direct Demanding Officers).
5. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples if called for, should be submitted free of charges, and collected back at the supplier's expenses.
6. **Local Firms:** Quotations should be for free delivery to this Institute. If Quotations are for Ex-Godown, delivery charges should be indicated separately.
7. **Firms Outside Chennai :** Quotations should be for F.O.R Chennai. If F.O.R. consignor station, freight charges by passenger train / lorry transport must be indicated. If Ex-Godown, packing, forwarding and freight charges must be indicated.
8. The rate of Sales / General Taxes and the percentage of such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. Where this is not done, no claim for Sales / General Taxes will be admitted at any stage and on any ground whatsoever. The taxes leviable should take into consideration that we are entitled to have Concessional Sales Tax applicable to non-Government Educational Institutions run with no profit motive for which a concession. Sales Tax Certificates will be issued at the time of final settlement of the bill.
8. Goods should be supplied carriage paid and insured.
9. Goods shall not be supplied without an official supply order.
10. Payment: Every attempt will be made to make payment within 30 days from the date of receipt of bill / acceptance of goods, whichever is later.



Prof. M. Kamaraj
Head of the Department
Metallurgical & Materials Engineering
Indian Institute of Technology Madras
Chennai - 600 036, India

Physical Metallurgy Laboratory
IIT Madras

Specifications for Image Analysis System compatible with existing optical microscope (Leitz – Metallux 3)

SNo.	Description	Specification
1	Camera	<ul style="list-style-type: none"> ▪ Camera hardware should be compatible with the existing optical microscope (Leitz – Metallux 3) ▪ Camera type: Digital - 3 megapixel resolution (2048 x 1536 megapixel) ▪ FireWire B interface. ▪ 25fps for 1024 x 768 live preview. ▪ Image size range from VGA to 7 megapixel ▪ CMOS sensor with Bayer Array RGB. ▪ 10 bit analog-digital conversion. ▪ Color or grayscale images. ▪ Integration times of 0.1 ms to 2 s. ▪ Digital focus finder. ▪ Online histogram for image optimization.
	Software	<ul style="list-style-type: none"> ▪ Image acquisition live control parameters viz. white balancing, gamma, color saturation, exposure time, sharpness etc, ▪ Calibration by stage magnification scale for different magnifications. ▪ <u>Stitching</u> of individual images of the same magnification and combining into a single image. ▪ <u>Multi focus</u> of individual images of same magnification and combining into a single image. ▪ Magnification marker on the image (Editable font and scale bar size) ▪ Basic measurements - Stereology with point to point length measurement, annotation, angle measurement, area measurement etc, linear distance, curved length, area, angle, count, grey level. All measurements to be shown in specific units. ▪ Ability to import images and analyse the same, for example electron microscopy images.
2	Analysis– Grain Size Measurement as per ASTM E 112	<ul style="list-style-type: none"> ▪ Equivalent standards JIS G 0551/0552, ISO 643:2003 ▪ Grain size analysis on both, bright field and dark field images. ▪ Analysis of color and monochrome images ▪ Methods - Comparison, Planimetric, Intercept, 3-point Circle methods. ▪ Grain boundary reconstruction of images prior to processing and analyzing. Individual grain parameter measurement – phase area measurement.

3	Analysis– Phase Volume Fraction ASTM E 562	<ul style="list-style-type: none"> ▪ Phase identification by color, contrast and image pre filtering techniques. ▪ Analysis of multiple phases, capable of analyzing a minimum of 5 phases. ▪ With one reference phase, evaluation of other phases as relative percentage. ▪ Analysis of colour images (For example, colour-based phase identification and volume fraction analysis in polarized light micrographs).
	General – Reporting Format	<ul style="list-style-type: none"> ▪ Customized report preparation by software in MS Excel/Word. ▪ Averaging of results of multiple analyses. ▪ Acquired /typical image and processed image along with the report. ▪ Statistical representation by distribution charts.

Guidelines –

1. Warranty minimum 1 year for the instrument as well as analysis software.
2. "Detailed compliance report / certificate" for the above specification should be submitted.
3. Technical bid and commercial bid to be offered separately.
4. Sealed quotations to reach on or before 15 February, 2013, addressed to:
Professor.Ashutosh S Gandhi
Head of Physical Metallurgy Laboratory,
Department of Metallurgical and Materials Engineering,
Indian Institute Of Technology Madras,
Adyar,
Chennai - 600036



Dr. ASHUTOSH S. GANDHI
ASSOCIATE PROFESSOR
 Dept. of Metallurgical & Materials Engg.
INDIAN INSTITUTE OF TECHNOLOGY MADRAS
CHENNAI - 600 036, INDIA