



THE UNIVERSITY of MISSISSIPPI

Purchase Order

Bill To:
 The University of Mississippi
 Office of Procurement Services
 P.O. Box 1848
 University, MS 38677-1848
 Phone: (662) 915-7448
 Fax: (662) 915-7752

Ship To:
 The University of Mississippi
 Office of Procurement Services
 Distribution Center
 164 Jeanette Phillips Drive
 University MS 38677

Vendor Address

METRO LASER, INC.
 22941 MILL CREEK DRIVE
 LAGUNA HILLS CA 92653-1215
 Phone: 949-553-0688
 Fax: 949-553-0495

Information

PO Number 4500232009 **Revision** 00001
Date 02/10/2016
Vendor No. 6503771
Payment Terms Net 30 Days
FOB Terms FOB Destination Frt PP & Added
Buyer/Phone Belinda Redmond / 662-915-7448
Confirmed with Christina Arnold
Your reference P1424UMCH

Item	Material/Description	Quantity	UM	Net Price	Net Amount
0001	<p>Custom Double Pulse Shearography System Requisition #: 10130672 with pixelated, instantaneous phase shifting interferometry</p> <p>The main components of the system are: # Quantel Q-smart 850, 532 Twins SLM +2W module with dual seeder tuned for the same line on a 1200x300 mm breadboard, or equivalent. # One (1) Pulse Delay Generator, BNC Model 575, with 8 channels, or equivalent # One (1) Shearography Head based on Michelson or Mach-Zehnder interferometer. # One (1) 4D Technologies MPix Pixelated Micropolarizing Camera and Software; or equivalent. # One (1) High Performance PC, operating under Windows 7 Professional, or later. # Miscellaneous Optics (lenses, polarization, mirrors) # Miscellaneous Optics Mounts (custom and COTS) # Custom Built Housing</p> <p>SPECIFICATIONS</p> <p>The double pulse shearography system will include: # Shearing device to adjust shearing amount from 0 to 10 degrees and adjustable horizontal and vertical direction # Imaging lens system with a field of view of approximately 800x1000 mm² at two meters distance and a bandpass filter for 532 nm wavelength # The system will allow adjustment of separation time between two</p>	1	EA	285,000.00	285,000.00

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	<p>laser pulses and correspondingly between two recorded frames in the range from about 10 #s to 50 ms, as permitted by the pulse generator, camera and laser.</p> <p>The software package will include:</p> <p># The 4D Technology 4Sight software modified for arbitrary double pulse capability. The software will allow automatic phase map generation, evaluation and display, and saving data files of the final unwrapped phase map and intermediate phase maps for each laser pulse in a format that could be exported to Matlab.</p> <p># Software (open code) for controlling the laser source and image recording. It will allow selection of time delay between pulses of two lasers, synchronization of laser pulses with two frames of the CCD camera, and triggering a laser pulse and the camera with an external signal (trigger delay time, trigger level). The software will allow adjustment of separation time between two laser pulses and correspondingly between two recorded frames in the range from 10 microseconds to 50 milliseconds; as permitted by the camera and laser.</p> <p># The software (open code) to process an unwrapped phase map to provide a map of object surface tilt over a selected (X,Y) area. Alternatively, the surface tilt map may be displayed within the 4Sight software. MetroLaser shall explore optimal strategies and consult with UM. The tilt will be calculated from the phase map using a shearing amount, and the angle between illumination and observation beams as input parameters. The software will also allow</p>				

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	<p>the scaling of the object to obtain coordinates and dimensions of the object in linear units (for example millimeters).</p> <p>Other:</p> <ul style="list-style-type: none"> # Training at the University of Mississippi site during delivery. # User Manuals - Operating Instructions for the complete system - Service and Maintenance Instructions <p>Warranty:</p> <ul style="list-style-type: none"> # Major components (i.e., Laser, Pixelated Camera and the Pulse Generator) will carry the manufacturers' warranty. From the initial delivery to MetroLaser, the Laser carries a warranty of two (2) years, the Pixelated Camera is one and a half (1S) years, and the Pulse Generator is one (1) year. # The optical head developed by MetroLaser will carry a one (1) year warranty after installation at the University of Mississippi. <p>Payment Terms:</p> <p>The following payment schedule is requested:</p> <p>Milestone #1: Submission of design plan, detailed specifications, and functional layout of hardware and software, including a list of the main components of the system.</p> <p>Payment #1: \$285,000.00 - Due: February 19, 2016</p> <p>*** Item completely delivered ***</p>				

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0002	Milestone #2 Requisition #: 10130672 Delivery date: 05/04/2016 Milestone #2: . (a) Purchase of main components: double-pulse laser system, pulse delay generator, and 4D Technologies 1 MPix pixelated micropolarizing camera and software. (b) Submission of optical schematics and opto-mechanical and mechanical design of the system. (c) Specify and order modified 4Sight software for double pulse capability, software package for controlling the laser source and image recording, and for processing an unwrapped phase map. (d) Testing software at MetroLaser, Inc. . Payment 2: \$100,000.00 - Due: May 04, 2016	1	EA	100,000.00	100,000.00
0003	Milestone #3 Requisition #: 10130672 Delivery date: 07/14/2016 Milestone #3: . (a) Complete construction of shearography head and integrate it with laser system. (b) Completion of modified 4Sight software (b) Testing the complete system including software at METROLASER, Inc. . Payment 3: \$40,000.00 - Due: July 14, 2016	1	EA	40,000.00	40,000.00

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0004	Milestone #4 Requisition #: 10130672 Delivery date: 08/15/2016 Milestone #4: . Delivery of final product and on-site training at UM National Center for Physical Acoustics. . Payment 4: \$145,521.00 - Due: August 15, 2016 . Note: Delivery: Six (6) months ARO - Price Validity Period: Six (6) months from date of quote . . DFA Approval #8800004885 . Per your Quote #P1424UMCH, Rev. 4, Dated February 01, 2016	1	EA	145,521.00	145,521.00
				Total excl. Tax	570,521.00

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