

School of Biomedical Engineering ESTC Charges for Technology Proposal

Proposal Overview

The School of Biomedical Engineering (SBME) requests funds in the amount of \$11,804.20 in order to purchase a complete Zeiss Axiostar Plus microscope. This is an upright laboratory microscope with phase contrast and fluorescence illumination. This microscope will be integrated into various SBME and College of Engineering classes and corresponding labs. Within the lab environment, students will use the microscope to routinely screen cell viability, to observe expression of green fluorescence protein (GFP) in live cells and to detect fluorescently labeled proteins. This microscope will also enable students to be introduced to Fourier optics concepts and learn the advantages of phase contrast microscopy. Concepts of live-cell imaging will be studied in the classroom and this microscope will provide an excellent opportunity for experimental demonstrations. The quote outlining the features and cost of the microscope including a compact digital camera is attached in two parts.

Interdisciplinary Program

The SBME at Colorado State University is supported by four colleges (Engineering is the lead college) and has over 50 faculty members in 13 departments, providing a unique interdisciplinary focus on bioengineering research and education. The School's interdisciplinary structure enables horizontal integration of academic and research programs across multiple departments. SBME students and faculty work in interdisciplinary teams to fight cancer, develop new orthopedic implants, or design new biosensors to treat neurological disorders. The SBME offers PhD, Master of Science, and Master of Engineering degrees as well as an undergraduate Interdisciplinary Studies Certificate. The SBME is currently developing a new undergraduate major for engineering undergraduate students. It is anticipated that the first students will enroll in 2010 and that the steady state enrollment will be approximately 200 students.

Projected Impact

The proposed equipment will directly impact SBME students' education by enhancing their classroom, lab and research experiences. Integration of the Axiostar Plus upright microscope into classrooms and labs will give students access to demonstrations and hands-on, practical learning not currently available. The current courses which will utilize the proposed equipment and their respective average enrollments (per year) are listed below. These courses serve both undergraduate and graduate students reaching approximately 140 students annually. The microscope will also be used for a new 300-level laboratory class in the new undergraduate major with approximately 50 engineering students per year.

<i>Course</i>	<i>Average Enrollment</i>
MECH 331 - Introduction to Engineering Materials	109
BIOM/ECE 533 – Biomolecular Tools for Engineers	10
BIOM/MECH 525 – Cell & Tissue Engineering	14
BIOM 495 – Independent Study	3
BIOM 486 – Practicum	5

Furthermore, SBME students conducting research outside of the classroom environment (ie: research practicum, independent study) will also gain access to this valuable tool allowing them to enhance their projects through cell imaging and microscopy.

QUOTATION



Carl Zeiss MicroImaging, Inc.

One Zeiss Drive
Thornwood, NY 10594

(800) 233-2343

Fax (800) 488-6351

Quote Number: 151-54301034-1

Official Date: May 06, 2009

To: Dr. Diego Krapf
Dept. of Electrical and Computer Engineering and S
Colorado State Univ.
1320 Campus Delivery
Fort Collins CO 80523-1320

Corporation F.E.I.N. 13-4186423 D.U.N.S. 03-837-6674

Date: May 06, 2009

TEL: +1 970 4914255

FAX:

We propose to supply the instrumentation listed below at the prices quoted and under the conditions stated. Prices in this quotation are valid 30 days from above date. State and local taxes where applicable are not included. Freight charges will be prepaid and added to invoice. Buyer's acceptance is subject to our terms and conditions, which are either attached hereto, available at <http://www.zeiss.com/microtandc> or may be faxed upon request.

TERMS: Net 30 Days

FOB: Shipping Point

DELIVERY: 4 - 6 Weeks ARO

QUANTITY	CATALOG NO.	DESCRIPTION	UNIT PRICE \$	AMOUNT \$
		AXIOSTAR PLUS FOR PHASE CONTRAST AND EPI-FLUORESCENCE WITH HBO 50W *****		
1	0000001029023000	Condsr 0.9/1.25 f/Axiostar	181.00	181.00
1	0000001033187000	Slider Ph2 f/Axiostar	141.00	141.00
1	4440200000000000	Pinhole diaphragm d=30mm	26.00	26.00
1	3800799690000000	Bulb HAL 6V/20W long life	25.00	25.00
1	0000001220224000	Contrast Enhancement Filter D=32	11.00	11.00
1	4410309901000000	A-Plan 10x/0.25 WD=4.5	200.00	200.00
1	4410519910000000	A-Plan 40x/0.65 Ph2 WD=0.45	624.00	624.00
1	4410809903000000	A-Plan 100x/1.25 Oil WD=0.15	738.00	738.00
1	0000000428273000	FL Light Train f/ Axiostar	2,309.00	2,309.00
1	4109488015030000	SET 15 EX BP 546/12 W/424931	521.60	521.60
1	4109488017030000	SET 17 BP485/20 W/424931	747.20	747.20
1	4109488049030000	4109488049030 SET 49 DAPI w/424931	634.40	634.40
1	4230039000000000	Lamphousing HBO50 w/coll	1,998.00	1,998.00
1	3816190000000000	Burner HBO 50 W/AC L 1	141.00	141.00
1	4326070000000000	Transformer for HBO 50, stabilized	525.00	525.00

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QUANTITY	CATALOG NO.	DESCRIPTION	UNIT PRICE \$	AMOUNT \$
1	0000000428270000	Binoc Tube 30/20 100:100 f/ Axiostar	888.00	888.00
2	4442329904000000	Eyepiece E-PI 10x/20 Br foc	215.00	430.00
ITEMS ABOVE REFLECT COMPLETE MICROSCOPE				
			Total	10,140.20
			Shipping and handling	57.00
			GRAND TOTAL	10,197.20

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		<p>Quotation prepared by: Kaili Weil Account Manager Carl Zeiss Microlmaging Cell Phone 970-222-2423 kweil@zeiss.com</p> <p>*****</p> <p>TO PLACE YOUR ORDER: Please choose to place your order via FAX, PHONE, or E-MAIL!</p> <p>Please reference this quotation by number. Please put contact name of the researcher on your PO.</p> <p>To place your order by FAX please FAX your Purchase Order along with this quotation to the attention of Renee Stewart to Fax # 800-488-6351.</p> <p>To Place your order by PHONE please call 1-800-233-2343. Any sales support specialist answering the phone will be able to assist you with your phone order. You can also use a credit card with this method instead of needing a Purchase Order.</p> <p>To place your order via E-MAIL please e-mail your purchase order along with a copy of the Zeiss quotation to microfaxorders@zeiss.com.</p> <p>*****</p>		

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		<p>For GSA orders: Government purchase cards accepted GSA Contract Number: GS-07F-5620R GSA Contract Expiration date 1/31/2010 GSA NIH BPA: 52684 Open Market NIH BPA: 57738 "G" reflects that item has GSA price</p> <p>*****</p> <p>PLEASE NOTE THAT CARL ZEISS, INC. CAN NOT BE RESPONSIBLE FOR THE MALFUNCTION OF THE SYSTEM DUE TO COMPONENTS (SUCH AS COMPUTER HARDWARE OR SOFTWARE) THAT ARE ADDED TO THE SYSTEM BY THE END-USER. CHANGES TO CORRECT SUCH MALFUNCTIONS WILL BE THE RESPONSIBILITY OF THE END USER.</p> <p>*****</p> <p>THANK YOU FOR CHOOSING ZEISS!</p>		

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QUANTITY	CATALOG NO.	DESCRIPTION	UNIT PRICE \$	AMOUNT \$
		CARL ZEISS MICROSCOPE ACCESSORIES =====		
1	4261349905000000	CONSUMER GRADE CAMERA FOR AXIOSTAR ***** Camera Set Canon Compact Digital PowerShot A650 IS 12 Megapixel CCD, 4000 x 3000 effective pixels 6x zoom F 2.8-4.8/7.7-44.4mm (35mm film equivalent: 35-210mm) digital zoom: 4x 2.5" LCD (flip-out and twist) and optical viewfinder USB 2.0 connector for WINDOWS 2000/XP/Vista, MAC OS X 10.3-10.4 for image data download live image via Video Out (Pal/NTSC in full composit quality) image format: JPEG (super fine, fine, normal) movie format AVI (640 x 480@30fps) slot for SD/SDHC/MMC/HCMC card Delivery package:	486.00	486.00

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		PowerShot A640, SD Memory Card 32MB filter adapter 52mm, 4 AA batteries power supply 100-240V with country-specific power cord A/V connection cable, USB cable + 3m extension TWAIN (2000) driver, PhotoStitch, ZoomBrowser EX Multilingual manual on CD Please Note: Camera control vis PC is NOT possible. If PC control is required please quote 426133-9902-000 instead		
1	4261250000000000	Camera Adapter 44 M52x0.75 Var	950.00	950.00
1	4561400000000000	C-Mount Intermediate Adapter 60/44mm	133.00	133.00
		Total		1,569.00
		Shipping and handling		38.00
		GRAND TOTAL		1,607.00

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Brad Reichel
824 Ponderosa Dr.
Fort Collins, CO 80521
970-689-2334
contactbrad@gmail.com

Dr. Diego Krapf
Colorado State University
Engr. C101G, ERC A111
Fort Collins, CO
970-491-4255
krapf@engr.colostate.edu

Dear Dr. Krapf

Subject: Response to Request for Interdepartmental Funding

The Engineering Student Technology Committee (ESTC) considered several requests for interdepartmental funding at our meeting on May 8. I am pleased to report that the committee approved your request for a Zeiss Axiostar Plus microscope for up to \$12,000.

During our discussion, the committee expressed concern that this equipment be made available to all students. You indicated that would be the case. The committee would like to hear from you as to how you plan to make this instrument available to all students so that those interested will be aware of the resource.

Please coordinate the purchase of the microscope with the Engineering Business Office and charge account 259130-3605. If possible, the equipment should be purchased during the current fiscal year, but no later than the end of fiscal year 2010.

Sincerely



Brad Reichel
Engineering Student Technology Committee Chair