Request for Proposal

Biconic Mirrors

July 30, 2008

A VASCUPP Member Institution
Issued by
Procurement Services
Charlottesville, Virginia
A. GENERAL INFORMATION

Request for Proposal (RFP) Name: Biconic Mirrors

RFP Number: #FF073008

Issue Date: July 30, 2008

Brief Description: Specialized biconic mirrors for collaborative Astronomy experimentation

Preproposal Questions: Any questions concerning this RFP must be sent to the buyer listed below no later than 3:00 p.m. (EDT) on Friday, August 15, 2008 in order to guarantee a timely response prior to the proposal due date.

Proposal Due Date: 3:00 p.m. (EDT) on Thursday, August 28, 2008.
Firms will send one original copy their proposal(s) to the address listed in the contact information box below. Additionally, firms will also send a complete electronic version of their proposal(s), formatted in Microsoft Word, to the email address listed in the contact information box below. The University of Virginia (the “University”) reserves the right to reject proposals received after the stated due date and time.

Negotiations: Negotiations, if needed, will be held (via e-mail) starting September 8, 2008.

Expected Award Date: September 26, 2008

REFER ALL QUESTIONS TO THE ISSUING OFFICE:

UNIVERSITY OF VIRGINIA
Department of Procurement Services
1001 North Emmet St, Carruthers Hall
P.O. Box 400202
Charlottesville, VA 22904-4202
Attention: Frank F. Fountain
Phone: 434-982-3092
Email: fff3x@virginia.edu

NOTE 1: If RFP proposal is sent U.S. Postal Service, use the P. O. Box. The University does not take responsibility for lost or misdirected mail.

NOTE 2: During the RFP process, all communication must be directed to the buyer listed above, with the exception of issues directly related to SWAM business and SWAM subcontracting opportunities. Such SWAM issues may be alternately directed to Bill Cooper, the University’s Director of Supplier Diversity, at (434) 924-7174 or SWAM@virginia.edu Any failure to adhere to this requirement may result in the rejection of the firm’s proposal or cancellation of the RFP.

This Request for Proposal (RFP) has been posted on Procurement Services web site for your convenience. Addenda and attachments are posted if issued. The RFP can be downloaded at this web site: [http://www.procurement.virginia.edu/main/publicpostings/RFP.html] It is the firm’s responsibility to ensure that the latest version of the entire RFP and related links are reviewed prior to submission of a proposal. We encourage you to check the web site frequently for any changes prior to the due date. Call (434) 924-1346 if you have trouble accessing the RFP from the web. For questions about the content of the
For ease of reference, each firm or individual receiving this RFP is referred to as a “firm” and the firm or individual selected to provide services for the University is referred to as the “Selected Firm.” This RFP states the instructions for submitting proposals and the procedure and criteria by which a firm may be selected.

### B. SCOPE OF GOODS & SERVICES

1. **It is the University's intent to enter into an Agreement with (and/or issue a Purchase Order to) the Selected Firm (or Firms) to provide biconic mirrors which will include those goods and services necessary to help the University achieve its goals as outlined in this RFP (the “Goods and Services”).**

The University is currently collaborating with the University of Arizona, University of Minnesota and University of Notre Dame to make an infrared camera that will image the combined focus of the Large Binocular Telescope (“LBT”) Observatory in Mount Graham, Arizona in two to five micron light. This camera will require two different on-axis concave biconic ellipsoidal mirrors. Both mirrors will operate in vacuum at approximately 70 K within a cryogenic dewar.

Firms are to provide a proposal (or proposals) detailing the fabrication of both biconic mirrors. If there are any specifications that dramatically affect the cost and/or alternate methodology a firm would like to propose, this is to be addressed in a firm’s proposal.

2. **Highly preferred capabilities/specifications for biconic mirror #1:**
   - **Quantity:** One with option of a second copy (for a spare)
   - **Material:** 6061-T651 Aluminum
   - **Aspect Ratio:** 6:1
   - **Description:** On-axis concave biconic ellipsoidal surface
   - **Y-Radius:** -645.034085 mm +/- 0.645 mm (0.1%)
   - **Y-Conic Constant:** -0.449139 +/- 0.05
   - **X-Radius:** -654.757139 mm
   - **Ratio of Radii (X-Radius/Y-Radius):** 1.015074 +/- 0.0005 (0.05%)
   - **X-Conic Constant:** -0.423821 +/- 0.05
   - **Decenter:** None -- mirror is on-axis
   - **Clear Aperture Diameter:** >= 100 mm
   - **Overall Diameter:** 110 mm
   - **Surface Figure (across full clear aperture):** lambda/10 RMS @ lambda = 632.8 nm
   - **Surface Roughness:** 15 nm root mean square (“RMS”)

3. **Highly preferred capabilities/specifications for biconic mirror #2:**
   - **Quantity:** One with option of a second copy (for a spare)
   - **Material:** 6061-T651 Aluminum
   - **Aspect Ratio:** 6:1
   - **Description:** On-axis concave biconic ellipsoidal surface
   - **Y-Radius:** -347.288058 mm +/- 0.347 mm (0.1%)
   - **Y-Conic Constant:** -0.163886 +/- 0.05
   - **X-Radius:** -352.502695 mm
• Ratio of Radii (X-Radius/Y-Radius): 1.015015 +/- 0.001 (0.1%)
• X-Conic Constant: -0.152325 +/- 0.05
• Decenter: None -- mirror is on-axis
• Clear Aperture Diameter: >= 134 mm
• Overall Diameter: 145 mm
• Surface Figure (across full clear aperture): lambda/10 RMS @ lambda = 632.8 nm
• Surface Roughness: 15 nm RMS

4. Highly preferred capabilities/specifications common to both mirrors:
• Ratio of Radii (X-Radius/Y-Radius):
  This specification, for both biconic mirrors, is the 'worst offender' in the optical tolerance budget. Firms will detail in their proposal if these specifications are expensive to meet or are easy to meet and can be tightened.
• Surface Figure:
  Firms will detail in their proposal a proposed method of testing to verify if the mirrors meet surface figure requirements. Clear aperture surface figure requirements have been determined through tolerance analysis of zernike polynomials 4-10. Firms must also test and report these zernike coefficients for finished mirrors. Beam sizes from individual field points are 16 mm (9 mm) on Biconic 1 (2).
• Back Mounting Surface:
  The back mounting surface will be perpendicular to the mirror optical axis to within +/- 30 arcsec and actual tilt-X and tilt-Y will be measured within +/- 15 arcsec. The back mounting surface to be diamond machined to inspection level polish to facilitate use of scribed fiducials for alignment. The distance along the normal between the back mounting surface and mirror vertex to be measured and reported to within +/- 0.050 mm.
• Mechanical Mounting:
  Firms will propose and design a three-point mirror mounting scheme that minimizes mechanically induced stress upon the mirror surface figure when the mirror is fastened to holders within the instrument. It will include appropriate holes(slots/pins) to precisely locate the mirrors relative to the holders at all temperatures between room temperature and approx. 70K. The University will design and fabricate mirror holders (also made from 6061-T651 aluminum) compatible with the mirror mounting scheme proposed by the Selected Firm.
• Opto-mechanical Clocking:
  Because a biconic does not have radial symmetry it is important that the clocking between the x- and y- axes of the optic is understood relative to the mounting scheme. The mirror will be 'clocked' relative to the mounting scheme within +/- 30 arcsec and measured within +/- 15 arcsec. A fiducial mark will indicate an axis of the optic. The Selected Firm will work with the University to determine the location and associated tolerances for this ‘clocking’ fiducial.
• Aperture Decenter:
  The mirror vertex will be positioned in X and Y with respect to the pin-located mounting scheme within +/- 0.125 mm and actual decenter will be measured within +/- 0.050 mm.
• Mechanical Fiducials:
  The Selected Firm will scribe fiducial marks for focus positioning (around the mirror sides), translational positioning (mirror back), and clocking (location to be determined) while the mirrors are being processed to facilitate opto-mechanical alignment. The Selected Firm will work with the University to determine final fiducial locations. Fiducial tolerances will be +/- 0.125 mm in location and +/- 0.050 mm in knowledge where feasible.
• Material and Stress Relieving:
The material for the mirrors will be supplied by the Selected Firm but stress relieving will be the responsibility of the University. Firms will anticipate that mirror material will need to be shipped to the University or another designated location at appropriate times [after rough machining, after finish machining, after final figuring (prior to coating) in the production process for stress relieving].

• Bevels:
Mirrors edges will have 0.5mm x 45deg bevels.

• Coating: Bare Gold
Mirrors will be used within a cryogenically-cooled vacuum dewar. Reflective coating will be able to withstand multiple thermal cycles between room temperature and approx. 70K within vacuum. The Selected Firm will demonstrate that the surface figure and surface roughness specifications are maintained after coating application. Proposals should include theoretical coating curves and actual measured curves for recently coated bare gold optics for the wavelength range 1.5-5.5 micron.

• Vendor shall demonstrate that the mirrors meet these specifications and metrologize all fiducial and hole/slot/pin locations.

5. Installation
Not expected to be handled by the Selected Firm. This will be the responsibility of the University.

6. Delivery
Delivery to Charlottesville, Virginia will be the responsibility of the Selected Firm. The University highly prefers delivery within six-months from receipt of an order.

7. Warranty
The University highly prefers a minimum of a one-year warranty from the point of Product Acceptance.

C. BASIS OF SELECTION

Proposals will be evaluated based upon the overall merits/value of the proposal including, but not limited to, price. The University will evaluate proposals, and if a firm is to be selected, select the firm on the basis of:

1. The firm’s plan to provide the University with the products as described in the Scope of Good and Services section;
2. The firm’s experience in providing Goods and Services similar to those described in this RFP, to include the firm’s references from clients;
3. The firm’s price proposal; and
4. The firm’s Small, Woman-owned and Minority-owned (SWAM) businesses status and/or the firm’s plan for utilization of SWAM businesses. For more information about SWAM and the University’s SWAM plan, please see the letter at Attachment 1 and refer to the following site: [www.procurement.virginia.edu/main/publicpostings/rfp/SWAMplan.pdf](http://www.procurement.virginia.edu/main/publicpostings/rfp/SWAMplan.pdf).

Note 1: A 10% minimum weight will be given to this criterion in evaluating proposals.
Note 2: Any questions related to SWAM business and SWAM subcontracting opportunities can be directed to Bill Cooper, the University’s Director of Supplier Diversity, at (434) 924-7174 or [SWAM@virginia.edu](mailto:SWAM@virginia.edu).
D. CONTENTS OF PROPOSAL

Proposals should be prepared simply and economically, providing a straightforward, concise description of capabilities to satisfy the requirements of the RFP. Emphasis should be on completeness and clarity of content, and should be organized in the order in which the requirements are presented in the RFP. Firms should provide the following information:

1. A brief history of the firm and its experience, qualifications and success in providing the type of product requested.
2. A detailed description and the full specifications of the biconic mirrors proposed. Each firm should indicate in their proposal the firm’s ability to achieve / comply with each specification. In the event that the firm wishes to propose an alternate specification that, in any way, differs from the above specifications, the firm should detail their proposed change(s) and how the proposed change would compare to the listed specification. Proposals should be formatted in such a way to address each of the above specifications in a line-by-line process.
3. The estimated ship date of the product from the time of the order [i.e. 10 weeks after receipt of order (“ARO”)].
4. Information on the warranty associated with the product you are proposing and any extended warranty (include the price) that might be available.
5. The firm’s proposed price / fee for providing the Goods and Services, to include shipping charges (the University’s shipping terms are FOB Destination).
6. At least three references where similar goods and/or services have been provided. Include the name of the firm / organization, the complete mailing address, and the name of the contact person and their telephone number.
7. The firm’s Small, Woman-owned and Minority-owned (SWAM) businesses status and/or how the firm intends to utilize SWAM firms in regards to this particular procurement.
8. Provide a list of institutions of higher education with which the firm has signed a term contract.
9. Provide the amount of annual sales the firm has with each VASCUPP Member Institution. A list of the VASCUPP Members can be found at: [http://www.vcu.edu/procurement/coopcon.htm](http://www.vcu.edu/procurement/coopcon.htm)
10. Complete and return the information requested in Attachment 2, Firm Information.

NOTE: Virginia Freedom of Information Act

Except as provided below, once an award is announced, all proposals submitted in response to this RFP will be open to the inspection of any interested person, firm or corporation, in accordance with the Virginia Freedom of Information Act. Trade secrets or proprietary information submitted by firms as part of its proposal will not be subject to public disclosure under the Virginia Freedom of Information Act; however, the firm must invoke the protections of this section prior to or upon submission of its proposal, and must identify the specific data or other materials to be protected and state the reasons why protection is necessary. Firms may not request that its entire proposal be treated as proprietary information.

E. TERMS AND CONDITIONS

This solicitation and any subsequent award are subject to:

- The Selected Firm registering as a vendor with the University of Virginia. [https://www.procurement.virginia.edu/forms/USVendorRegForm.html](https://www.procurement.virginia.edu/forms/USVendorRegForm.html)
• The Selected Firm registering and accepting eVA Terms and Conditions prior to award. [http://www.eva.virginia.gov/]


• The University’s Preferred Contractual Provisions: [http://www.procurement.virginia.edu/main/publicpostings/rfp/preferredprovisions.pdf]

**Note:** Unless a firm *expressly and specifically states its exception* to any of the Preferred Provisions in its written proposal, then the proposal from the firm will automatically be deemed to include those Provisions.


### F. OTHER INFORMATION

**R. Insurance**
Listed below is the insurance the Selected Firm must maintain under any Agreement resulting from this RFP. In no event should the Selected Firm construe these minimum required limits to be their limit of liability to the University. The Selected Firm will maintain insurance which meets or exceeds the requirements of the University with insurance companies that hold at least an A- financial rating with A.M. Best Company. No Agreement will be executed by the University until the Selected Firm satisfies the insurance requirements of the University. The Selected Firm may be required to provide the University with a valid Certificate of Insurance before providing any goods or services to the University. The University reserves the right to approve any insurance proposed by the Selected Firm.

**Comprehensive Commercial General Liability:**
The Selected Firm and any Subcontractor will provide a minimum combined single Limit of Liability for bodily injury and property damage of $1,000,000 per occurrence with coverage for the following coverage:

{X} Premises/Operations  {X} Products/Completed Operations
{X} Contractual

**S. Term of Agreement**
The term of this Agreement will be for five years with no renewal options.

**T. Future Goods and Services**
The University reserves the right to have the Selected Firm provide additional goods and/or services under the same pricing, terms, and conditions to make modifications or enhancements. Such additional Goods and Services may include other products, components, accessories, subsystems or related services that are newly introduced during the term of this Agreement. Such newly introduced additional Goods and Services will be provided to the University at favored nations pricing, terms, and conditions.
U. Product Acceptance
   “Product Acceptance” will encompass testing and observation of the fully functional and
   operational product. The University’s Contract Administrator will determine if the product
   specifications have been met, shortly after installation and integration of the product.
   Warranty will begin as of the date of Product Acceptance. In the event that the University
   does not accept the product, the University may elect to require the Selected Firm to
   provide a replacement product or terminate the Agreement.

   The University’s Contract Administrator will be the sole representative of the University
   and will have sole authority to act on the University’s behalf with regard to Product
   Acceptance; however, that in the event of a dispute regarding any material aspect of
   Product Acceptance unable to be resolved by the University’s Contract Administrator, then
   the procedures in Attachment 3, Procedure for Resolution of Contractual Claims will be
   followed.

V. Payment Method
   Unless otherwise deemed appropriate by the University, the Selected Firm will enroll in
   one of the University approved vehicles for receipt of electronic payment.

W. Confidentiality
   The Selected Firm represents and confirms that the contents of the firms proposal(s) and
   any resulting Agreement are not confidential and will be open to the inspection of any
   interested person, firm or corporation, in accordance with the Virginia Freedom of
   Information Act.
Greetings:

The quality of service the University of Virginia is able to deliver to its customers is directly related to the excellent support we receive from you and many other outstanding suppliers of goods and services. Without you, we would not be able to fulfill our educational, health care and research missions. An important part of our procurement program involves our commitment to doing business with small, women-and minority-owned (SWAM) businesses. As one of our most important vendors, we look to you to help us achieve this objective.

We conduct substantial business with small firms. We have been less effective in securing long-term business relationships with minority-and women-owned businesses. We are determined to improve our record.

I seek your assistance in two areas. First, to the extent practical, I ask that you involve small, women-and minority-owned businesses in the delivery of services you provide to UVa. Second, I seek your help in reporting your results through our quarterly subcontracting reports. The terms and conditions previously provided to your organization outlined this process.

This effort is important to us. We depend on you in so many ways – this is another way that we can partner with your company to make things better.

Sincerely,

Leonard W. Sandridge  
Executive Vice President and Chief Operating Officer

LWS:dr

Madison Hall · Post Office Box 400228 · Charlottesville, Virginia 22904-4228
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<thead>
<tr>
<th><strong>Full Legal Name</strong> (Company name as it appears with your Federal Taxpayer Number):</th>
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<tr>
<td>Address:</td>
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<td>Telephone Number:</td>
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<td>Web Address:</td>
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<td>Email Address:</td>
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<td>DUNS Number:</td>
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**SWAM Information:**

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<th>Is your firm certified with the Commonwealth of Virginia’s Department of Minority Business Enterprises (DMBE):</th>
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<td>☐ Yes ☐ No</td>
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<tr>
<td>Minority-Owned Business:</td>
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<td>Women-Owned Business:</td>
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<td>Small-Owned Business:</td>
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<th>Is your firm registered as a vendor in the Commonwealth of Virginia’s e-procurement system (eVA)?</th>
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<td>☐ Yes ☐ No</td>
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**Point of Contact for this Proposal:**

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<th>Name:</th>
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