Statement of Work for GQuEST Cavity Optics C2300113-v2 Lee McCuller

1 Scope

1.1 Purpose/background

Mirrors are required to allow the construction of optical filtering cavities for the GQuEST experiment at Caltech. The cavities are built using 3 flat optics and a single (concave) curved optic. The cavities used two different coating types to use half of the mirrors as coupling optics at 1550nm and the other half for 775nm light.

1.2 Deliverables

The procurement is for the precision shaping, polishing and ion-beam sputter coating of four types of mirrors. Our target is to have all work completed as soon as possible.

1.3 Preamble

This invitation is for the manufacture, test, and delivery of coated optical wedged flat and curved mirrors, to be used by the customer in the production of high finesse, low-loss optical cavities.

Two mirrors of types M1 (coating-A) with a single M2 and M3 (each coating-B) are employed to form four-mirror "bow-tie" cavities, with beams entering or leaving the flat mirrors or "Couplers", and with the M2 and M3 mirrors being highly reflective at 1550nm. Throughput and finesse at 1550nm are the driving requirements, therefore, the flat mirrors must be well-matched in transmission and the loss within the cavity has to be negligible in comparison to the transmission of these mirrors. The optical quality and specifications at 775nm are relaxed compared to 1550nm, with the role of couplers vs. reflectors reversed between M1 and M2 ,M3.

2 Technical References and Document Access

Drawings and engineering documents are attached as listed below.

3 Parts to be manufactured, quantity required, and inspection requirements:

Item 1	Quantity required
plane mirrors M1 with coating A	24.
Substrate and coating specification: T2300191-v1 M1,	
coating-A	

auantity required
16.

Item 3	Quantity required
curved mirrors M3 with coating B	8. The buyer is willing to pay
Substrate and coating specification: T2300191-v1	for 16 substrates if the
M3, coating-B	additional 8 substrates are at
	the -1.5m curvature. Additional
	8 substrates can be uncoated

if not delivered in time for the
first 8 and coating-B run.

Item 4	Quantity required
curved mirrors M3 with coating B	8.
Substrate and coating specification: T2300191-v1	
M4, coating-B	

4 Manufacturing Notes:

Coating specifications: the transmissions of the M1 "Input/Output Couplers" should also be matched to each other as best as possible. The tender documents should therefore address the bidder's capabilities to match the transmissions within each lot and batch and the expected tolerance for each whole batch.

Quantity: Adjustments to the specified quantities may be made based on the batch size of the Supplier, to make most efficient use of the Supplier's capabilities. Therefore, the quotation should include information about the bidder's lot or batch size for parts processing.

5 End Item Data Package:

At the time of delivery of the parts, the Supplier shall provide test data for the parts, as described in the coating and substrate specifications.

6 Delivery Requirements:

6.1 Shipping Destination(s):

Lee McCuller MC 149-33 California Institute of Technology 391 South Holliston Avenue Pasadena, CA 91125 United States of America Contact for delivery +1 626 395 2778