UCF | Procurement Services

SOLE SOURCE CERTIFICATE AND POSTING NOTICE

A sole source procurement is when you make a request to purchase product(s) and/or service(s) without competition when competition is otherwise required. This means that product/service is unique and that the supplier is the only supplier that can provide the product or service. In accordance with the authority granted under applicable Florida law and UCF Regulation 7.130, the following documentation is submitted in support of this request.

The purchase requisition can be entered into UCF Financials at any point during the process set forth herein; however, doing so does not ensure approval of the sole source.

The completed sole source must be approved in the following order. **Please be sure to obtain all required signatures before submitting the form to Procurement Services.**

- PI/Researcher/Director/Chair
- President/Vice President/Dean
- Procurement Specialist
- Procurement Services Associate Director
- Assistant Vice President for Tax, Payables & Procurement, who will review and provide a recommendation to approve or disapprove the sole source to:
- Chief Financial Officer, who will either directly approve or disapprove the sole source, or forward it to the Provost and Executive Vice President for goods/services related to academia for input prior to making the final decision.

Contingent upon the approval of all the officers/individuals listed, the sole source shall be posted on the UCF Procurement Services website for seventy-two (72) business hours. Upon expiration of said posting period, Procurement Services will process a purchase order upon receipt of the requisition.

Once the completed sole source is received, Procurement Services reviews the documentation provided and determines whether the sole source is valid or if there are additional suppliers that may be able to provide the requested product or service. The sole source review and approval process varies based on the nature of the product/service being requested and the information provided in the requestor's justification, among other factors, so please keep this in mind when submitting the form.

The usual bidding process shall be conducted if sole source approval is not granted.

PART I: DEPARTMENT AND SUPPLIER INFORMATION

Department Name: NanoScience Technology Center

Contact & Phone: Arkadiy Lyakh, 407-823-0699

Purchase Request No.:

Product/Service Cost: $400,000 (two calendar years)

Company Name: IQE KC LLC

Email: rnotarangelo@iqep.com

Contact Person: Ralph Notarangelo

Title: Customer Service Coordinator

Product and/or Service: global supplier of advanced wafer products and wafer services

Telephone: 610-861-6930 ext 4085

Facsimile: N/A

Address: 200 John Hancock Road

City: Taunton

State and Zip: MA, 02780

PART II: SOLE SOURCE JUSTIFICATION (see pages 4-5)

Only justifications submitted on this form and in the below format will be reviewed for approval. All of the below listed points MUST be fully answered on the following pages and any additional attached pages as needed. Failure to submit justification as outlined in the format below will result in the form being returned without review.

1. Describe the product(s) and/or service(s) and anticipated use thereof in layman's language.

2. State in detail why only this and no other product(s)/service(s) will satisfy the department's requirements.

3. State why the product(s) and/or service(s) are available from only one source and how that determination was made. Explain the research conducted to support this claim.

4. Provide an explanation to support the belief that the price is fair and reasonable.

PART III: SOLE SOURCE CERTIFICATIONS

A. In my professional opinion, this is the only product or service that can reasonably meet my requirement(s)/specification(s), and this is the only supplier who can provide the product or service. I further certify that the information contained herein is true and correct to the best of my knowledge and belief and would withstand any audit or supplier protest.

B. I, the undersigned, certify that I and/or the user do not have a financial interest in the above named supplier or contractor, and that I am unaware of any conflict of interest related to this purchase.

Arkadiy Lyakh — Digitally signed by Arkadiy Lyakh Date: 2022.03.03 16:41:22 -05'00'

Signature

Arkadiy Lyakh, PI

Printed Name and Title (PI/Researcher/Director/Chair)

3.18.22

Date

I, the undersigned, hereby concur with the above justification and authorize the acquisition of the above product(s) and/or service(s) on a sole source basis.

Elizabeth A. Klonoff — Digitally signed by Elizabeth A. Klonoff Date: 2022.03.18 14:01:34 -04'00'

Signature

Elizabeth A. Klonoff

Printed Name and Title (President/Vice President/Dean)
(Delegations not allowed; emails from absent approvers are acceptable)

3.18.22

Date

I, the undersigned, hereby concur with the above justification and support a sole source approval for the above product(s) and/or service(s).

See email approval attached		3.18.22
Signature	**Printed Name and Title (Procurement Specialist)**	**Date**

I, the undersigned, hereby concur with the above justification and support the acquisition of the above product(s) and/or service(s) on a sole source basis.

See email approval attached		
Signature	**Printed Name and Title (Procurement Services Associate Director)**	**Date**

I, the undersigned, hereby concur with the above justification and authorize the acquisition of the above product(s) and/or service(s) on a sole source basis.

See email approval attached		
Signature	**Printed Name and Title (Asst. Vice President for Tax, Payables & Procurement)**	**Date**

I, the undersigned, hereby concur with the above justification and authorize the acquisition of the above product(s) and/or service(s) on a sole source basis.

See email approval attached		
Signature	**Printed Name and Title (Chief Financial Officer)**	**Date**

POSTING NOTICE

4/1/22 3:00 pm EST	4/4/22	2221	Trinh Nguyen
Date/Time Posted	**Posting End Date**	**UCF Control No.**	**Procurement Specialist**

SOLE SOURCE JUSTIFICATION

Please answer the questions below and attach additional documentation if needed.

1. Describe the product(s) and/or service(s) and anticipated use thereof in layman's language.

Intro: My group's research is focused on so-called Quantum Cascade Lasers, or QCLs. QCLs are very complex semiconductor light emitting devices. Their manufacturing cycle includes epi-growth, where over 1000 extremely thin semiconductor layers are deposited under high vacuum conditions onto a semiconductor substrate (semiconductor disk). My group's expertise is in the design of the layer sequence and processing of a grown wafer into functional devices. The growth step is outsourced to a pure-play foundry (no products other than epi-growth) that provides epi-growth services.

The product is deposition (by evaporation) of extremely thin semiconductor layers on top of a semiconductor substrate (non- -thick) under ultra-high vacuum conditions. Overall number of layers is on the order of one thousand and thickness of each layer is comparable to distance between atoms (1/1000 diameter of human hair). IQE will deposit ~1,000 extremely thin layers on surface of a blank substrate (semiconductor disk). Layers thicknesses and compositions will be controlled per our design. Upon epi-growth they will ship the wafer to UCF for us to process it into functional devices. Testing and characterization of the functional devices is our end goal. Improvement in device performance is of great interest to DoD.

2. State in detail why only this and no other product(s)/service(s) will satisfy the department's requirements.

QCLs are multi-layered semiconductor devices and epi-growth is the only manufacturing method for these devices.

Continued on next page

SOLE SOURCE JUSTIFICATION

3. State why the product(s) and/or service(s) are available from only one source and how that determination was made. Explain the research conducted to support this claim.

There is no big market (revenue) yet for either QCL wafers or for QCLs themselves. IQE is the only supplier offering QCL epi-growth. I am constantly looking for alternative suppliers of quantum cascade laser wafers as I do not want to rely on a single company in my research. This includes internet search for these services, talking to various companies in the QCL field that manufacture QCL-based products to see if there are any other suppliers, attending trade shows where services like that are typically advertised.

4. Provide an explanation to support the belief that the price is fair and reasonable.

There is no good benchmark price for this product. However, IQE pricing is generally consistent with that for other semiconductor wafers, corrected for growth time and material use.

From: Gerald Hector
To: Joel Levenson
Cc: Brian Sargent; Trinh Nguyen
Subject: RE: PO for growth of S51 by IQE - IQE Sole Source
Date: Friday, April 1, 2022 11:22:38 AM

Joel:

After reading the attached materials, I approve.

Regards,

Gerald L. Hector
Senior Vice President
Administration and Finance
University of Central Florida
4635 Andromeda Loop N
MH384
Orlando, FL 32816
Tel: (407) 823-1063
Email: gerald.hector@ucf.edu

From: Joel Levenson <Joel.Levenson@ucf.edu>
Sent: Friday, April 1, 2022 10:51 AM
To: Gerald Hector <Gerald.Hector@ucf.edu>
Cc: Brian Sargent <Brian.Sargent@ucf.edu>; Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: FW: PO for growth of S51 by IQE - IQE Sole Source

Good morning Gerald,

I support this sole source award as well. We've provided this company sole source awards in the past due to their unique service provided to assist the PI in their research. Other companies researched either do not offer the service, or are not experienced enough to meet the specifications needed.

If you agree, reply all and indicate as such, or let us know what questions you have.

Thank you,

From: Brian Sargent <Brian.Sargent@ucf.edu>
Sent: Thursday, March 31, 2022 2:38 PM
To: Joel Levenson <Joel.Levenson@ucf.edu>
Cc: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Subject: FW: PO for growth of S51 by IQE - IQE Sole Source

Hi Joel,

I support this sole source for approval. This particular products has a history as being sole source in nature, with approved waivers starting back in 2017. Since then competitors have not entered the market place and the sole source nature still exists. Please approve/disapprove.

Regards,

Brian

From: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Sent: Monday, March 28, 2022 4:43 PM
To: Brian Sargent <Brian.Sargent@ucf.edu>
Subject: FW: PO for growth of S51 by IQE - IQE Sole Source

Hi Brian,

I have reviewed the attached waiver and can support it with the following reasons. Can you please review to see if you agree or not.

Vendor: IQE
Product: Advanced wafer products and services
Total Amount: $400,000 (two calendar years)
Dept: NanoScience Technology Center

Requirement:
This sole source is for Quantum Cascade Laser (QCL) semiconductor wafers that are manufactured using a specialized process called epi-growth explained in detail in the waiver and upon the completion of the epi growth, the wafers are shipped to UCF for the department to process them into functional devices. Testing and characterization of the functional devices is the department's end goal as part of their work with DOD.

A sole source for this specialized wafer was approved back in 2017 for two years and again in 2020 for another 2 years. The current waiver has expired, and the department submitted a 3rd, 2yrs, sole source request and confirmed that the market for this material is still specialized and has not changed.

- IQE USA, Sole Source 1809 from 12/5/17 to 12/4/19.
- IQE USA, Sole Source 2007 from 1/6/20 to 1/5/22.

Research Conducted: The PI provided the below recent research for potential sources but concluded that IQE is still the only company that can provide wafer epi-growth products and services

with a track record.

AdTech Optics: This supplier has QCL wafer growth capability. However, they only sell completed devices as opposed to offering just wafer growth. (http://atoptics.com/products.html?gclid=Cj0KCQjw0PWRBhDKARIsAPKHFGhK9KNDwgSY0R2fZZzVVNQCu3OpeGzZJy3YCr8kjSWSIdMJkasTepAaAhgaEALw_wcB),

Intelliepi: This supplier considered growing a QCL structure but when the PI spoke to them, he did not get a sense that they had much experience with QCL epi-growth which is extremely difficult to do, and their quote would not reflect what is required. (https://intelliepi.com/products/).

Price is fair and reasonable: It was noted that there is no good benchmark price for this product since no one else besides IQE can provide. However, IQE pricing has been consistent since 2017. The unit cost of 1 epi-growth wafer is $4,500.

Thanks,
Trinh

From: Arkadiy Lyakh <Arkadiy.Lyakh@ucf.edu>
Sent: Friday, March 25, 2022 1:44 PM
To: Trinh Nguyen <Trinh.Nguyen@ucf.edu>
Cc: Yujun Huang <Yujun.Huang@ucf.edu>; Usha Lal <usha@ucf.edu>
Subject: Re: PO for growth of S51 by IQE

Hi Trinh,

I work on ITAR-restricted contracts for which manufacturing has to be done in the USA. This is a small community and I can keep track of potential suppliers through word of mouth. IQE is the only company that provides wafer growth services (and has track record of doing this). Others, such as AdTech Optics (http://atoptics.com/products.html?gclid=Cj0KCQjw0PWRBhDKARIsAPKHFGhK9KNDwgSY0R2fZZzVVNQCu3OpeGzZJy3YCr8kjSWSIdMJkasTepAaAhgaEALw_wcB), have QCL wafer growth capability. However, they sell devices as opposed to offering just wafer growth.

The only other US-company that considered growing a QCL structure when I talked to them was Intelliepi (https://intelliepi.com/products/). They gave me an estimate of ~$50k and I got a feeling that they did not have much experience with QCL epi-growth (that is extremely difficult). I can get a quote from them, but, in my opinion, that would be a "fake" quote.

Thank you,
Arkadiy.

From: Trinh Nguyen <Trinh.Nguyen@ucf.edu>

Sent: Friday, March 25, 2022 1:04 PM
To: Arkadiy Lyakh <Arkadiy.Lyakh@ucf.edu>
Cc: Yujun Huang <Yujun.Huang@ucf.edu>; Usha Lal <usha@ucf.edu>
Subject: FW: PO for growth of S51 by IQE

Hi Arkadiy,

I need more information for my review. You mentioned that you are constantly looking for alternative suppliers for this type of epi-growth wafers; can you please provide me the names of other suppliers that you've have research and looked into for this technology? Can you provide and explain the most recent research you've conducted for other sources?

Thanks,
Trinh