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# Application Summary

## Competition Details

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**Competition Title:** MSFT Applications for 2021-2022

**Category:** Internal Funding

**Award Cycle:** 2021-2022

**Submission Deadline:** 03/16/2021 10:00 AM

## Application Information

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**Submitted By:** David Gillespie

**Application ID:** 855

**Application Title:** Analytical Instrument Capacity Building

**Date Submitted:** 03/15/2021 3:15 PM

## Personal Details

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**Applicant First Name:** Blake

**Applicant Last Name:** Gillespie

**Applicant Department:** Chemistry

**Email Address:** Blake.Gillespie@csuci.edu

**Phone Number:**

**Who is the Staff Support for Project/Activity?:** Scott Duffer

**Staff Support email:** scott.duffer@csuci.edu

## Application Details

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### Proposal Title

Analytical Instrument Capacity Building

### Brief Project Description

This request includes a family of instruments that will dramatically enhance our students' training in small molecule analysis. We propose acquiring a pair of rugged, low-maintenance benchtop instruments that will give students routine hands-on access to research-grade structure-determination tools. We also propose an initial service-contract purchase for our very sensitive and sophisticated - but damaged - liquid chromatography mass spectrometer. Finally, we propose a pair of low-cost sample preparation tools that will simplify sample prep in key environmental chemistry courses, facilitating student productivity and outcomes. Together, these instrument represent a real leap forward for Chemistry experiential instruction capacity.

#### **Benchtop NMR Spectrometer \$139,917.69**

This small, low maintenance, NMR could do 90% of the work our 500MHz instrument does, with no service contract. NMR stands for Nuclear Magnetic Resonance spectroscopy; think of an MRI machine for studying the structure small molecules. The instrument will become routine tool for use in the required and elective courses CHEM 312, 315, 410, 415, 420, 450, and 480, as well as in research courses and future electives. Students will be able to collect NMR spectra of their own experimental products during lab, compared to today, where student use of our current instrument requires extensive hands-on support by staff, and is really more of a demonstration tool. This instrument can be used by unsupervised students, routinely during lab periods; this access will multiply the instructional value of our NMR-related curriculum many-fold. This instrument will transform students' NMR experience, making sophisticated analysis and routine task and will provide them invaluable applied skills for use in, e.g., local industry. An estimated 150 student per year will use this instrument.

#### **Benchtop X-ray crystallography System \$99,985**

The Benchtop X-ray Crystallography System is a simple and affordable benchtop designed to provide quality, publishable results used to determine the structure of range of molecules including organic, organometallic and inorganic materials. Although it's an x-ray device, it is fully shielded and laboratory-safe. This instrument will be used to benefit students enrolled in core courses such as CHEM 312 and CHEM 315 laboratories. These are organic chemistry labs required for both chemistry and biology majors. The instrument will also be used to provide training for students enrolled in most of the CHEM 494 research labs, and will be an essential component of some important upper division courses such as CHEM 415, Molecular Structure determination; CHEM 420, Advanced Inorganic Chemistry; and CHEM 450, Instrumental Analysis and Laboratory.

#### **Service Contract for LCMS QTOF \$43,434**

In 2019, our LCMS sustained a major instrumentation failure, and is still only partly functional even after the manufacturer carried out on-site repairs. A one-year service contract will help us bring the instrument back to full operational capacity. Repaired and maintained, this instrument will be used in CHEM 311, 312, 415, 420, 450, 461, 463, and 480, as well as in nearly every research group. Service contracts are costly, but we have learned that - for sensitive equipment like the LCMS - they are essential.

#### **Buchi Multivapor P-6/12 Evaporation system with Rotovapor Interface \$13,080**

This is a workhorse tool that will be put to routine use in CHEM 302 Environmental Chemistry, and CHEM 480 Fermentation. It will allow students to easily prepare multiple samples, whereas they must currently work on one sample at a time; this will greatly impact throughput and productivity in these research-based courses.

#### **Visiprep Solid Phase Extraction Vacuum Manifold \$1,849.00**

Like the Buchi instrument, this too is a tool that will be put into constant service in CHEM 302 Environmental Chemistry and CHEM 480 Fermentation, but also in our 3-course organic chemistry series (312, 315, and 410). It will allow students to easily prepare multiple samples, whereas they must currently work on one sample at a time; this will greatly impact throughput and productivity in these research-based courses.

**Total request:\$298,265**

#### **Amount of MSFT Funding Requested**

298,265.69

#### **Project/Activity Budget Detail**

Benchtop NMR Spectrometer \$139,917.69

Benchtop X-ray crystallography System \$99,985

Service Contract for LCMS QTOF \$43,434

Buchi Multivapor P-6/12 Evaporation system with Rotovapor Interface \$13,080

Visiprep Solid Phase Extraction Vacuum Manifold \$1,849.00

Total request:\$297,219

**Will you receive funds from any other source(s)?**

No

**Other Funding Sources**

**Has this project or activity previously received MSFT funding?**

No

**Acknowledgment**

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**Fiscal Management**

Project applicant/sponsor's unit or department may be responsible for incurred over and above what is funded through the MSFT. If support is requested for costs beyond initial award, or for use on activities or materials not included in approved proposals, the project sponsor must seek approval from the MSFT committee. The project applicant/sponsor will be responsible for managing purchases, transfers of funds, and all transactions related to approved projects

Please review MSFT webpage for information about the fund and its objectives before submitting your application.



**CSU Channel Islands**  
**MSFT Proposed Budget**  
**2020-2021**

Please layout in detail when various components of your plan will be complete in order to achieve key milestones. This information will be use to forecast the spending of MSFT within the fiscal year.  
 PS: all purchases/services need to be received and billed to CI before June 30th to account for the current fiscal year.

**Project or Activity Title**

**Total Requested  
 \$\$**

Analytical Instrument Capacity Building

**\$298,265.69**

\*formulas will calculate totals

**MSFT Planning Budget Calendar 2020-2021**

Items or services requested to be funded	July 2020 -Period 1	August 2020-Period 2	September 2020 -Period 3	October 2020 -Period 4	November 2020 -Period 5	December 2020 -Period 6	January 2021 -Period 7	February 2021 -Period 8	March 2021 -Period 9	April 2021 -Period 10	May 2021 -Period 11	June 2021-Period 12	Grand Total
Benchtop NMR Spectrometer	\$139,917.69												\$ 139,917.69
Benchtop X-ray crystallography System \$99,985	\$99,985												\$ 99,985.00
Service Contract for LCMS QTOF \$43,434	\$43,434												\$ 43,434.00
Buchi Multivapor P-6/12 Evaporation system with Rotovapor Interf	\$13,080												\$ 13,080.00
Visiprep Solid Phase Extraction Vacuum Manifold	\$1,849.00												\$ 1,849.00
insert your items or service here													\$ -
insert your items or service here													\$ -
insert your items or service here													\$ -
insert your items or service here													\$ -
* you can add lines to your budget by inserting lines here													\$ -
<b>Total</b>	<b>\$298,265.69</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ -</b>	<b>\$ 298,265.69</b>