



# NSF-REU: Sunshine Institute for the Interaction of Light with Matter

(updated July 29, 2024 at 4:30 p.m.)



**Ed Hilinski and Bridget DePrince**

<https://www.chem.fsu.edu/reu/>

***Department of Chemistry and Biochemistry***

***Florida State University***

***Tallahassee, Florida 32306-4390***





## Summer 2024 - May 28 to Aug 2

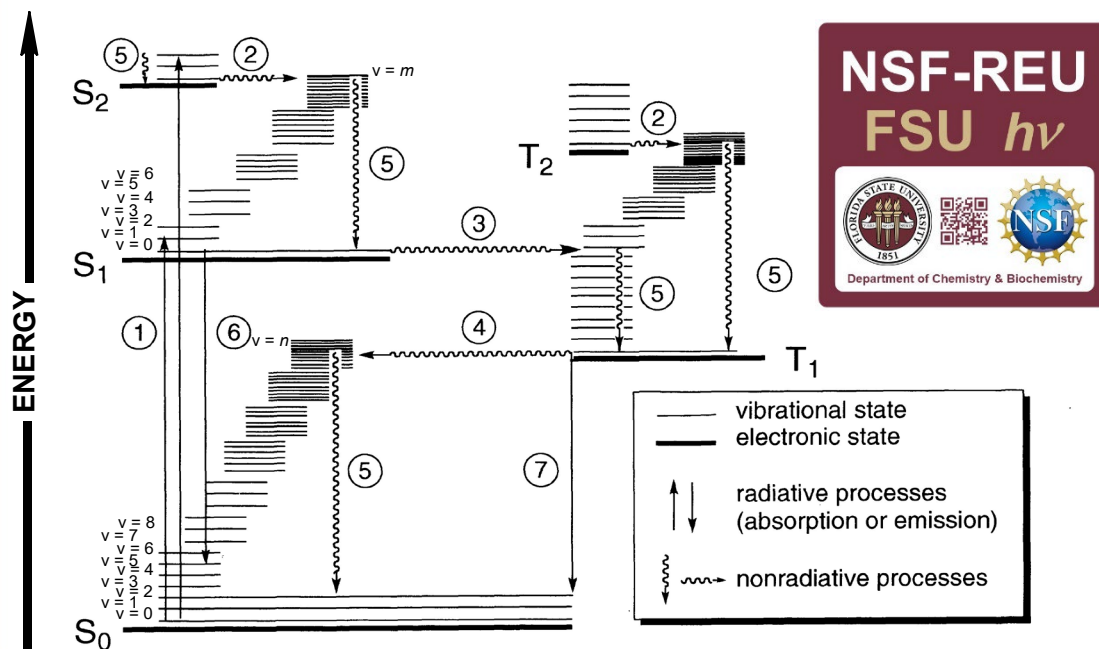
## Ed Hilinski and Bridget DePrince

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***Department of Chemistry and Biochemistry***

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# A Chronology

## First Day - May 28, 2024 – Welcome!



REU Participant	Home Institution	In-Lab Mentor	Faculty Advisor
Cianna Chung	Ursinus College	Tarannuma Ferdous Manny & Sahel Moslemi	Biwu Ma
Brody Farace	Lafayette College	Sulthana Fehroza P.P. & Fernando Melo	Jack Saltiel
Airionna Fordham	Valdosta State University	Michael Commodore & Lona Dutta	Igor Alabugin
Corbin Frisvold	Kutztown University	Andrew Cantrell & Raul Ortega	Geoffrey Strouse
Kaylee Head	Samford University	Lucy Jenkins	Lei Zhu
Elizabeth Holyat	SUNY Binghamton University	Rachel Weiss Clark	Bryan Kudisch
Luke Jodoin	Univ. Arkansas – Fort Smith	Ethan Lambert	Kenneth Hanson
Tsion Lemi	Univ. Maryland, Baltimore County	Divya Kumar & Dibya Mondal	Michael Shatruk
Mariia Grebenkina	Ithaca College	Divya Kumar & Dibya Mondal	Michael Shatruk
James Leone	Hendrix College	Justin Phillips	Eugene DePrince
Eduarda Stein Christ	Texas Lutheran University	Victoria Li	Michael Shatruk
Taylor Walker	Misericordia University	Amir Zarei	Susan Lattuner





*Monday, May 20, 2024*

12:00 noon-1:00 p.m. In-Lab Mentors Workshop – CSL 1005

– Drs. Bridget DePrince & Ed Hilinski

## **First Week Agenda**

*Tuesday, May 28, 2024*

- |                  |  |
|------------------|--|
| 8:45-9:00 a.m.   | Walk to DLC from Ragans Hall – Dr. Bridget DePrince          |
| 9:00-9:30 a.m.   | Breakfast / Mingling – DLC 123                               |
|                  | Introduction to the Department – DLC 123                     |
|                  | Dept. Chair Wei Yang & Ed Hilinski                           |
| 9:30-10:00 a.m.  | Ice Breaker: Participants and Faculty Advisors Introductions |
| 10:00-11:00 a.m. | Meet the In-Lab Mentors – Lab Tours                          |
| 11:00-12:00 noon | Departmental Paperwork & HR                                  |
| 12:00-1:00 p.m.  | Group Lunch – REU Participants & invited guests              |
|                  | – Kearney Osceola Grille                                     |
| 1:30-2:30 p.m.   | Safety Training –  |
|                  | Ben Arline, Environ. Health & Safety – DLC 123               |
| 2:30-4:00 p.m.   | Departmental Paperwork & FSU ID –                            |
|                  | Dr. Ed Hilinski – DLC 123 & FSU Card Center                  |



## First Week Agenda *(continued)*



*Wednesday, May 29, 2024*

3:30-4:30 p.m.	Work in the Research Labs Departmental Ice Cream Social - CSL Lobby
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*Thursday, May 30, 2024*

Work in the Research Labs

*Friday, May 31, 2024*

3:30-5:00 p.m.	Work in the Research Labs REU Weekly Seminar - Dr. Ed Hilinski Entry Surveys, Baseline Quiz, summary of the first week Research ethics, lab culture, lab notebooks, expectations Research resources, tutorials, learning beyond lab, Scifinder Scholar, NMR training, ChemDraw, other software
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*Saturday, June 1, 2024*

10:00 a.m.-12:30 p.m.	Saturday Seminar Series - Zoom
2:00 p.m.	River Boat Ride, Swimming, and Dining at Wakulla Springs, FL - Dr. Ed Hilinski

## Weeks 2 - 10



	Date	Activity	Location, time
Week 2	T June 4	Photochemistry Café - Dr. Michael Shatruk	DLC 123, 9:00 a.m.
		Tour of Chemistry & Biochemistry Instrumentation Labs	DLC 123, 10:00 a.m.
	F June 7	REU Seminar - Ed Hilinski - discussion of research presentations	DLC 123, 3:30 p.m.
	Sa June 8	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 3	T June 11	Photochemistry Café – Dr. Biwu Ma - w/breakfast	DLC 123, 9:00 a.m.
	W June 12	Tour of the Magnet Lab at 10:00 a.m.	Tallahassee, FL
	F June 14	Photochemistry Café - Dr. Jack Saltiel	DLC 123, 3:30 p.m.
		REU Seminar (discussion of student research themes)	
	Sa June 8	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 4	T June 18	Tour of Nammo Perry Inc (depart at 7:30 am for tour at 9 am)	Perry, FL
	F June 21	REU Seminar (3-min student presentations: research themes)	DLC 123, 3:30 p.m.
	Sa June 22	Florida Caverns State Park - Dr. Ed Hilinski	2:00 p.m.
Week 5	T June 25	Photochemistry Café - Dr. Geoffrey Strouse	DLC 123, 9:00 a.m.
	F June 28	Photochemistry Café - Dr. Kenneth Hanson	DLC 123, 3:30 p.m.
		REU Seminar – Weekly Update with Ed Hilinski	
	Sa June 29	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 6	T July 2	Photochemistry Café - Dr. Kenneth Hanson - w/breakfast	
		- Graduate School Demystified	DLC 123, 9:00 a.m.
	R July 4	Independence Day picnic (by invitation) 4:00 p.m.	DePrince Residence
	F July 5	FSU Closed in Observance of Independence Day	
Week 7	T July 9	Photochemistry Café - Dr. Lei Zhu - w/breakfast	DLC 123, 9:00 a.m.
	R July 11	Tyndall Air Force Base (depart 7:40 am EDT for a 10:00 am CDT tour)	Tyndall, FL
	F July 12	Photochemistry Café - Dr. Susan Lattuner	DLC 123, 3:30 p.m.
		REU Seminar - Dr. Ed Hilinski - weekly review and update	
	Sa July 13	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.

## Weeks 2 - 10 (continued)

	Date	Activity	Location, time
Week 8	T July 16	Photochemistry Café - Dr. Bryan Kudisch - w/breakfast	DLC 123 9:00 a.m.
	F July 19	REU seminar (student 15-min research presentations)	DLC 123, 3:30 p.m.
		1. Elizabeth Holyat	
		2. Luke Jodoin	
		3. James Leone	
		4. Taylor Walker	
	Sa July 20	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 9	T July 23	Photochemistry Café - Dr. Igor Alabugin - w/breakfast	DLC 123, 9:00 a.m.
	T July 23	Dinner with REU Students, In-Lab Mentors & Faculty	Georgio's, 6:00 p.m.
	R July 25	REU seminar (student 15-min research presentations)	DLC 123, 3:30 p.m.
		5. Eduarda Stein Christ	
		6. Brody Farace	
		7. Cianna Chung	
		8. Tsion Lemi	
	F July 26	REU seminar (student 15-min research presentations)	DLC 123, 3:30 p.m.
		9. Airionna Fordham	
		10. Kaylee Head	
		11. Mariia Grebenkina	
		12. Corbin Frisvold	
	Sa July 27	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 10	T July 30	Photochemistry Café - Dr. Ed Hilinski - w/breakfast	DLC 123, 9:00 a.m.
	R Aug 1	Poster Session (student research presentations)	CSL lobby, 3:00 p.m..
	F Aug 2	Exit interviews and surveys	DLC 5 <sup>th</sup> Floor Conf. Rm.
	F Aug 2	REU seminar	DLC 123, 3:30 p.m.
		First Friday Festivities	6:30 p.m.
	Sa Aug 3	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	10:00 a.m.
	SaSu Aug 3-4	Student departures	





## REU In-Lab Mentors Workshop

May 20, 2024 - Chemical Sciences Laboratory (CSL) Room 1005  
with Drs. Bridget DePrince and Ed Hilinski



left to right: Michael Commodore; Lona Dutta; Justin Philips; Fernando Melo;  
Ethan Lambert; Dibya Mondal; Amir Zarei; Sahel Moslemi;  
Tarannuma Ferdous Manny; Sulthana Fehroza P.P.; Divya Kumar;  
Rachel Weiss Clark; Raul Ortega; Andrew Cantrell; Lucy Jenkins

## After Arrival in Tallahassee... Finally Dinner !

May 26, 2024 – Liberty Bar & Restaurant, Tallahassee, Florida with Dr. Ed Hilinski



left to right: Tsion Lemi; Airionna Fordham; Kaylee Head; Brody Farace;  
James Leone; Luke Jodoin; Corbin Frisvold; Mariia Grebenkina;  
Taylor Walker; Elizabeth Holyat



## The REU Participants Have Some Morning Beverages

May 27, 2024 - Black Dog Café, Tallahassee, Florida with Dr. Ed Hilinski



clockwise from 8 o'clock: Mariia Grebenkina; Kaylee Head; Elizabeth Holyat; Airionna Fordham; Taylor Walker; Brody Farace; James Leone; Luke Jodoin





## Lunch at Midtown Caboose

May 27, 2024 – Midtown Caboose Restaurant, Tallahassee, Florida with Dr. Ed Hilinski



left to right: James Leone; Tsion Lemi; Airionna Fordham; Mariia Grebenkina; Brody Farace; Kaylee Head; Taylor Walker; Elizabeth Holyat; Luke Jodoin



## Dinner at Midtown Noodles Bar

May 27, 2024 – Midtown Noodles Bar, Tallahassee, Florida with Dr. Ed Hilinski



left to right: James Leone; Corbin Frisvold; Elizabeth Holyat; Luke Jodoin; Brody Farace; Mariia Grebenkina; Tsion Lemi; Kaylee Head; Airionna Fordham; Taylor Walker; Cianna Chung



## **After Breakfast, Meeting with Faculty Advisors & In-lab Mentors, and Lab Tours... Lunch!**

**May 28, 2024 – Kearney Osceola Grille, Tallahassee, Florida  
with Drs. Ken Hanson, Bridget DePrince, and Ed Hilinski**





## Some Outside Air before Cheesecake

May 28, 2024 – Bobby Bowden Field at Doak Campbell Stadium  
outside the Kearney Osceola Grille, Tallahassee, Florida



## Back to Orientation... Safety Training

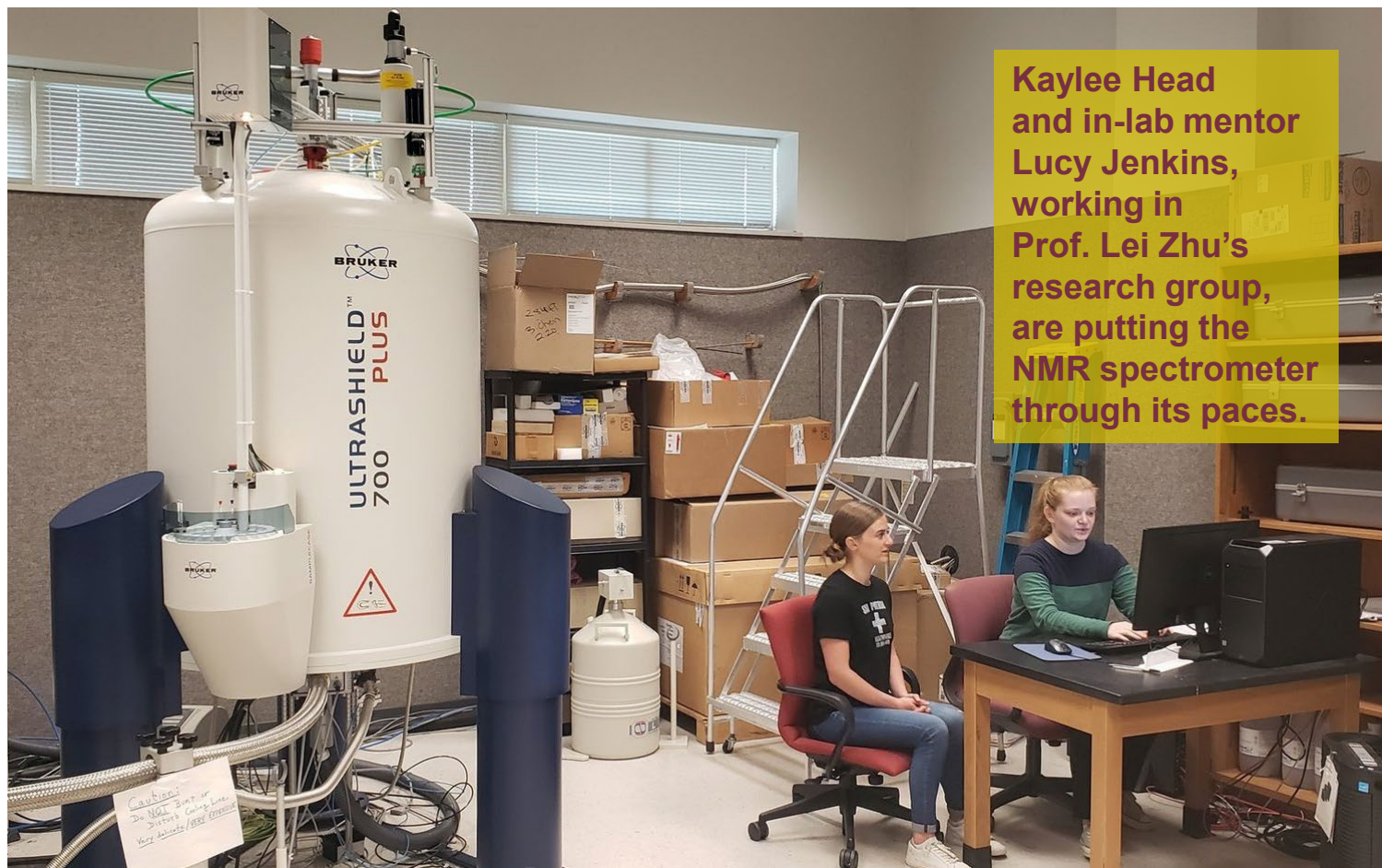
May 28, 2024 – DLC 123 with Ben Arline of FSU Environmental Health & Safety





## Let the Work Begin!

May 29, 2024





## Ice Cream Social

May 29, 2024 – 3:30 to 4:30 p.m. in the CSL Lobby

**Everyone in the FSU Chemistry & Biochemistry Community is invited.**





## Ice Cream Social

May 29, 2024 – 3:30 to 4:30 p.m. in the CSL Lobby





## REU Weekly Seminar

May 31, 2024 - DLC 123, 3:30-5:00 p.m. with Dr. Ed Hilinski

Entry survey, entry quiz, summary of the first week

Research ethics, lab culture, lab notebooks, expectations

Research resources, tutorials, learning beyond lab,

SciFinder Scholar, NMR training, ChemDraw, other software

<https://guides.lib.fsu.edu/c.php?g=352310&p=2380486>

<http://www.chem.fsu.edu/reu-links/>





**Saturday Seminar Series: Light as Reagent and Product**

**Professor Robert S. H. Liu**

**Memorial Lectures (zoom)**

**Saturday, June 1, 2024**

**10:00 AM-12:30 PM (EDT)**



**Robert S. H. Liu**  
(1938-2024)



**Prof. Jack Saltiel**

Department of Chemistry and Biochemistry, Florida State University,  
Tallahassee, Florida, USA

**The 2A state of 1,3-cyclohexadiene: is it  
an intermediate in the 1B state  
photochemical ring opening?**



**Prof. Juan (Tito) Scaiano**

Canada Research Chair in Applied Photochemistry,  
Department of Chemistry, University of Ottawa, Ottawa, Canada

**Decatungstate photochemistry:  
a wannabe carbonyl triplet**



**Prof. Dario Bassani**

Institut des Sciences Moléculaires - University of Bordeaux, France

**Fundamental and practical aspects  
of double bond photoisomerization**

<https://miami.zoom.us/j/91076429404?pwd=b05scFV2SElVY3RmRUVJRjRNxMVF4Zz09>

Meeting ID: 910 7642 9404; Passcode: 868219

# Group Watch Party

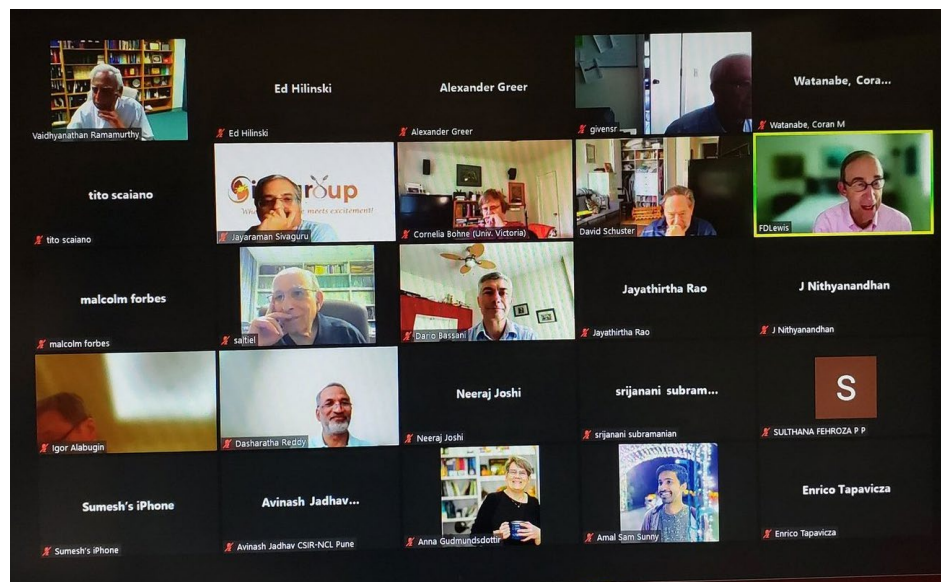
## Saturday Seminar Series: Light as Reagent and Product

<https://miami.zoom.us/j/91076429404?pwd=b05scFV2SElVY3RmRUVJRjRNxMVF4Zz09>

**June 1, 2024**

**DLC 123, 10:00 a.m. – 1:00 p.m.**

**with Ed Hilinski**







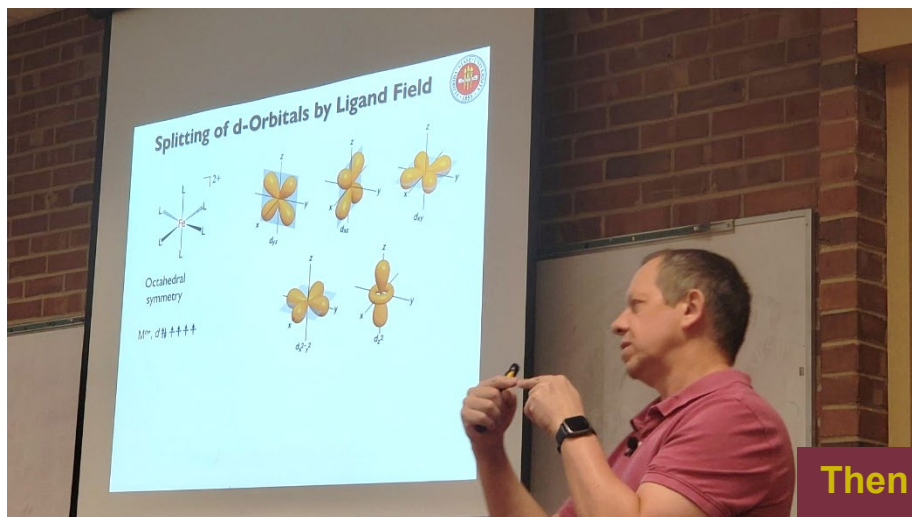
## Trip to Wakulla Springs

[www.floridastateparks.org/parks-and-trails/edward-ball-wakulla-springs-state-park](http://www.floridastateparks.org/parks-and-trails/edward-ball-wakulla-springs-state-park)

**June 1, 2024**  
**Wakulla, Florida**  
**with Ed Hilinski**







## Photochemistry Café

### ***“Bistability in Molecular Materials: From Spin-State Switching to Functional 2D Heterostructures”***

<http://www.chem.fsu.edu/reu-links/>

**Prof. Michael Shatruk**

June 4, 2024, 9:00-10:00 a.m.  
 DLC 123, Tallahassee, Florida



**Then on to a Tour of Departmental Instrumentation Labs  
 with Prof. Kenneth Hanson**





## REU Weekly Seminar

**June 7, 2024 - DLC 123, 3:30-5:00 p.m.**  
**with Drs. Ed Hilinski and Bridget DePrince**

Second-week survey, summary of the second week  
 Follow-up on: research ethics, lab culture, lab notebooks, expectations  
 Overview about 3-minute & 15-minute oral presentations and poster presentations







**NSF-REU: Sunshine Institute for the Interaction of Light with Matter**  
*Department of Chemistry and Biochemistry, Florida State University*



## The REU Participants Have Some Morning Beverages

June 8, 2024 - Black Dog Café, Tallahassee, Florida with Drs. Ed Hilinski, Eugene DePrince & Wei Yang





## An Afternoon at Lake Bradford

[campusrec.fsu.edu/outdoors/reservation/](https://campusrec.fsu.edu/outdoors/reservation/)

Live Lakefront Weather: <https://leon.weatherstem.com/fsurez>

June 8, 2024, FSU Lakefront Park, Tallahassee, Florida



2024/06/10 12:14:27



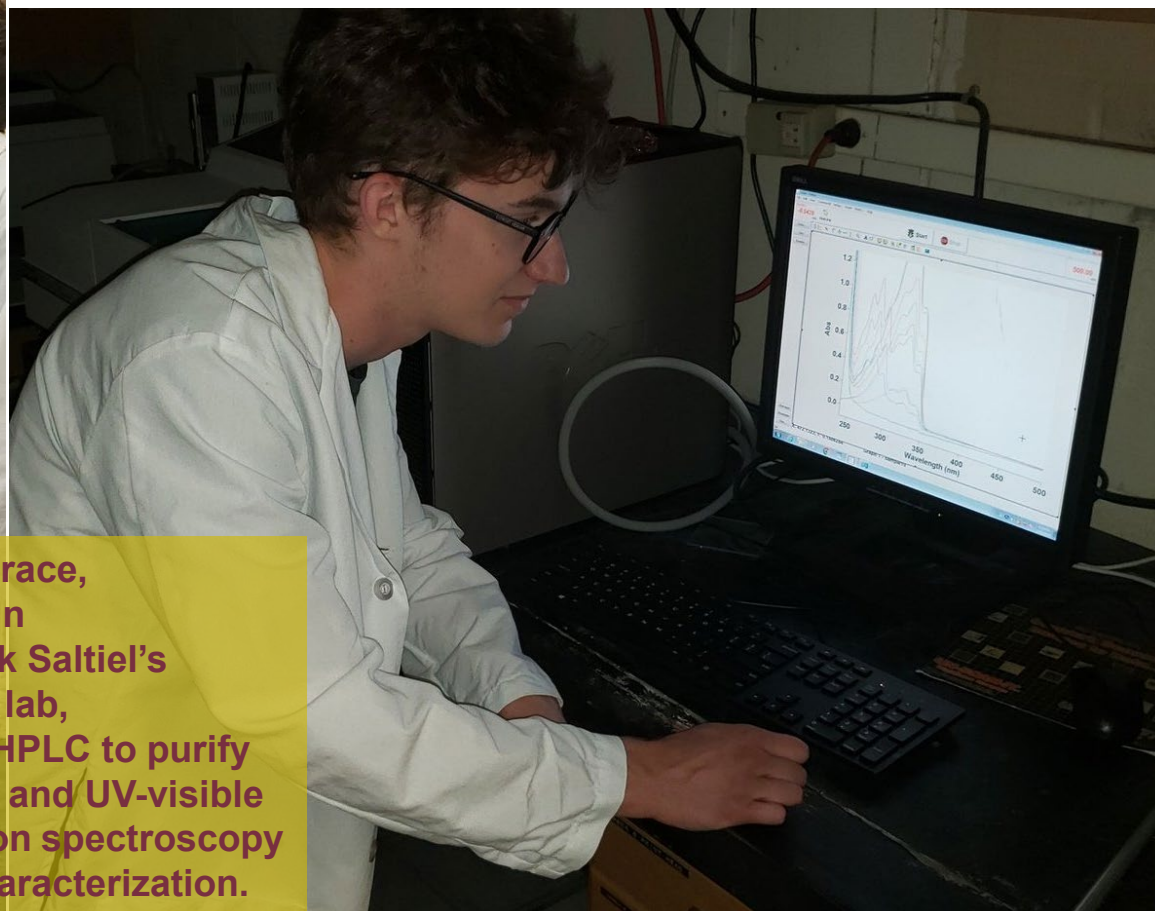


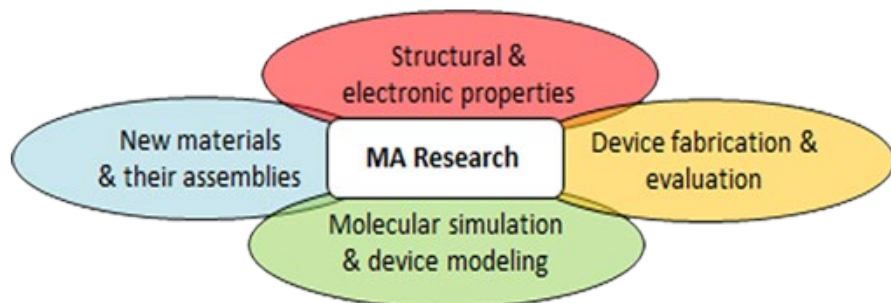
## Multitasking in the Lab

June 10, 2024



**Brody Farace,**  
 working in  
 Prof. Jack Saltiel's  
 research lab,  
 is using HPLC to purify  
 a sample and UV-visible  
 absorption spectroscopy  
 for its characterization.





## Photochemistry Café

### “Light Emitting Diodes Based on Metal Halide Perovskites and Beyond”

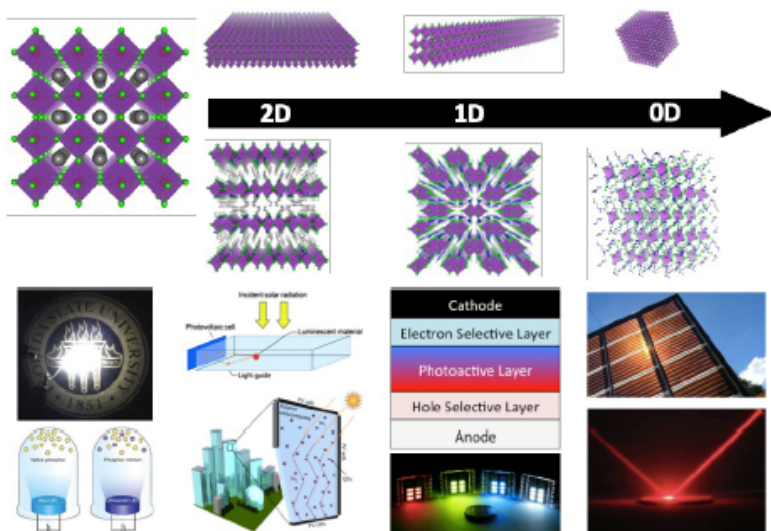
<http://www.chem.fsu.edu/reu-links/>

**Prof. Biwu Ma**

June 11, 2024, 9:00-10:00 a.m.  
 DLC 123, Tallahassee, Florida



#### Metal Halide Perovskites and Beyond



*Science Advances*, 2020, 6, eaaz5961; *Nature Communications*, 2017, 8, 14051; 2020, 11, 4329; *JACS*, 2018, 140, 13181-13184; 2020, 142, 16001-16006; *Angew. Chem. Int. Ed.*, 2017, 56, 9018-9022; 2018, 57, 1021-1024; 2020, 59, 14120-14123; 2020, 59, 23067-23071; 2021, 133, 2515-2522; *Advanced Materials*, 2016, 28, 305-311; 2016, 28, 8983-8989; 2018, 30, 1707093; *ACS Energy Letters*, 2018, 3, 54-62; 2018, 3, 1443-1449; 2019, 4, 1579-1583; *Chemical Science*, 2017, 8, 8400-8404; 2018, 9, 586-593; *ACS Materials Letters*, 2019, 1, 594-498; 2020, 2, 376-380; 2020, 2, 633-638; *J. Phys. Chem. Lett.* 2018, 9, 2164-2169; 2019, 10, 5836-5840; 2019, 10, 5923-5928; 2021, 12, 8229-8236; *Materials Science & Engineering R*, 2019, 137, 38-65; *Advanced Optical Materials*, 2019, 7, 1801474; 2020, 9, 2001766; *Chemistry of Materials*, 2018, 30, 2374-2378; 2020, 32, 374-380







## Getting Quizzed by Prof. Ma

<http://www.chem.fsu.edu/reu-links/>

June 11, 2024, 9:00-10:00 a.m.

DLC 123, Tallahassee, Florida





## Tour of the National High Magnetic Field Laboratory

[nationalmaglab.org/](http://nationalmaglab.org/)

June 12, 2023, 10:00-11:00 a.m. - Innovation Park, Tallahassee, Florida  
 Depart from DLC 123 at 9:30 a.m. with Dr. Ed Hilinski

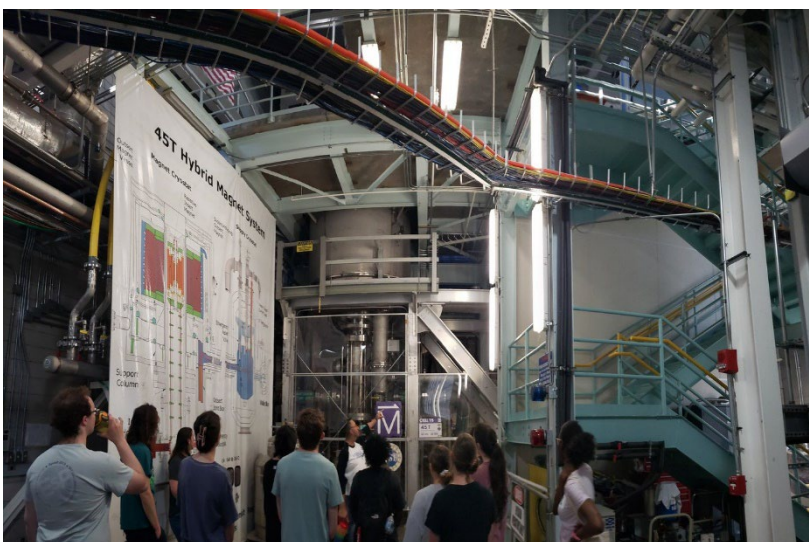




# Tour of the National High Magnetic Field Laboratory

[nationalmaglab.org/](http://nationalmaglab.org/)

June 12, 2023, 10:00-11:00 a.m. - Innovation Park, Tallahassee, Florida  
 Depart from DLC 123 at 9:30 a.m. with Ed Hilinski and Carlos Villa







## Lunch after the Mag Lab Tour

June 12, 2023, 11:30 a.m.-1:00 p.m.

Salty Dawg Pub and Deli, Tallahassee, Florida

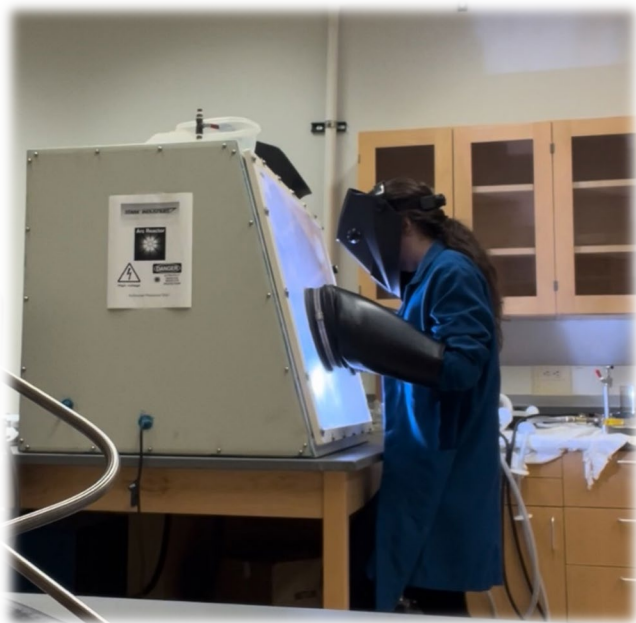
<https://www.facebook.com/p/Salty-Dawg-Pub-and-Deli-100063995407700/>



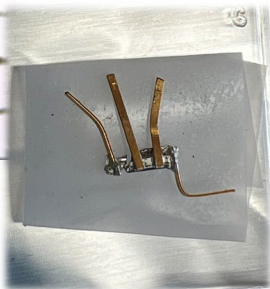
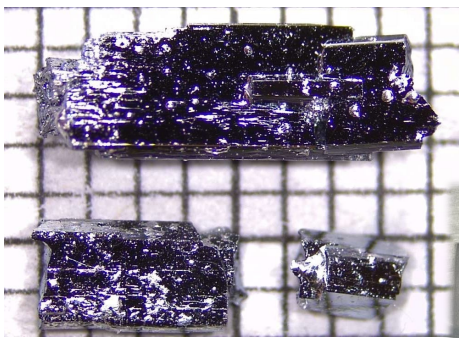


## Having fun in the materials chemistry research lab!

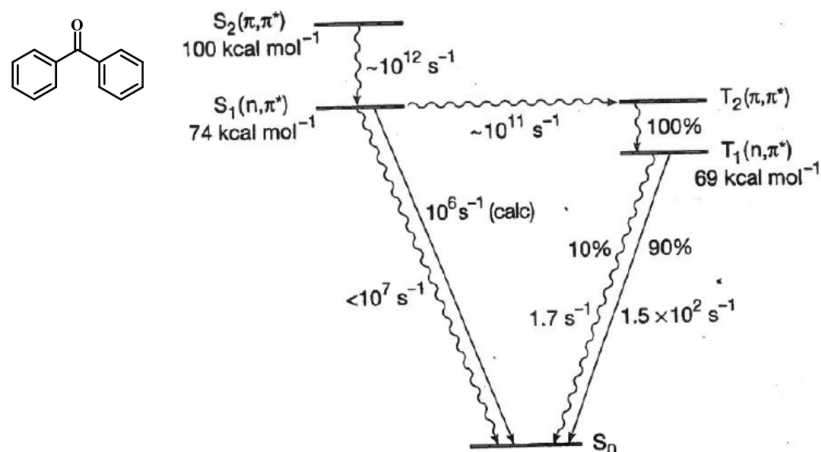
June 13, 2024



Taylor Walker, working in Prof. Susan Lattuner's research lab, is preparing, Isolating, and characterizing newly synthesized crystalline compounds.



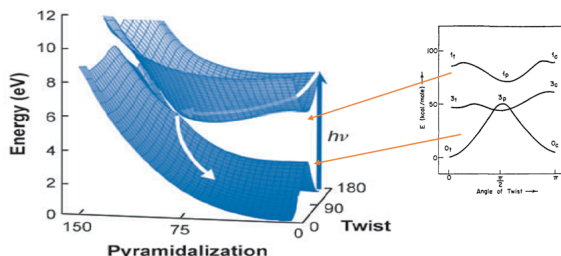
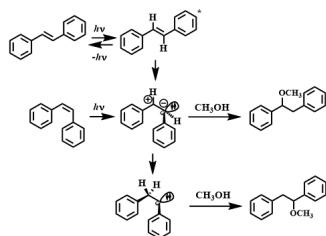
## Benzophenone State Diagram



Bayrakçeken, F. (2008) *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 2008, 71(2), 603–608.

## Multidimensional Isomerization – Conical Intersections – Trapping Twisted Intermediates

$$\vec{h}_{S_0S_1} = (E_1 - E_0)^{-1} \left\langle \psi_{S_0}^{el} \left| \frac{\partial \hat{H}}{\partial R} \right| \psi_{S_1}^{el} \right\rangle$$



Saltiel, J.; Gupta, S. Photochemistry of the Stilbenes in Methanol. Trapping the Common Phantom Singlet State. *J. Phys. Chem. A* **2018**, 122, 6089–6099.

B. G. Levine, T. J. Martinez. *Amu. Rev. Phys. Chem.* **2007**, 58, 613–34.

## Photochemistry Café “Elementary Photophysical Transitions and Photochemical Reactions”

<http://www.chem.fsu.edu/reu-links/>

Prof. Jack Saltiel

June 14, 2024, 3:30–4:30 p.m.  
DLC 123, Tallahassee, Florida





## Photochemistry Café

### *“Elementary Photophysical Transitions and Photochemical Reactions”*

<http://www.chem.fsu.edu/reu-links/>

**Prof. Jack Saltiel**

June 14, 2024, 3:30-4:30 p.m., DLC 123, Tallahassee, Florida



Followed by the **REU Weekly Seminar**

June 14, 2024 - DLC 123, 4:45-5:15 p.m.

with Dr. Ed Hilinski

Summary of and discussion about the third week





## The REU Participants Catching Some Shade

June 15, 2024 - Black Dog Café, Tallahassee, Florida with Dr. Ed Hilinski





## Happy Birthday, Elizabeth!

June 17, 2024 – DLC 123, Tallahassee, Florida with  
 Drs. Ed Hilinski, Bryan Kudisch, and Jack Saltiel

Black Forest Cake from  
**Au Péché Mignon French Pastry Shop**  
<https://www.frenchpastrytallahassee.com/>

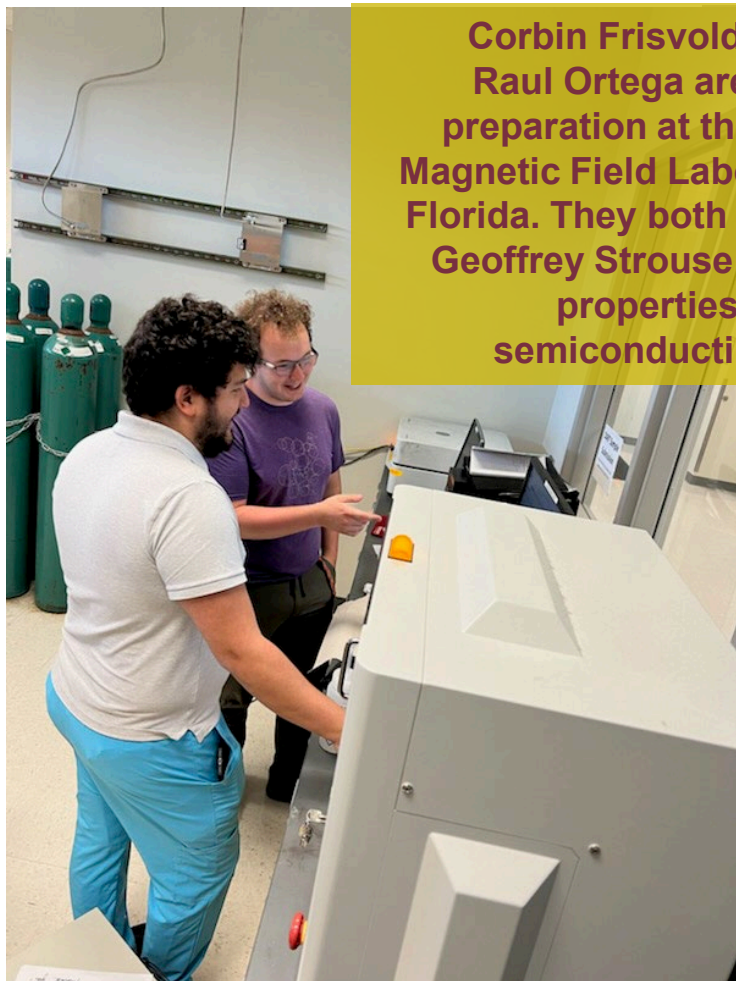


## The Samples Are Ready for Measurements

June 17, 2024



Corbin Frisvold and in-lab mentor Raul Ortega are finalizing sample preparation at the NSF National High Magnetic Field Laboratory in Tallahassee, Florida. They both are working with Prof. Geoffrey Strouse on studies of carrier properties in plasmonic semiconducting nanocrystals.







## Visit to Nammo Perry Inc

<https://www.nammo.com/location/perry/>

June 18, 2024 - Perry, Florida

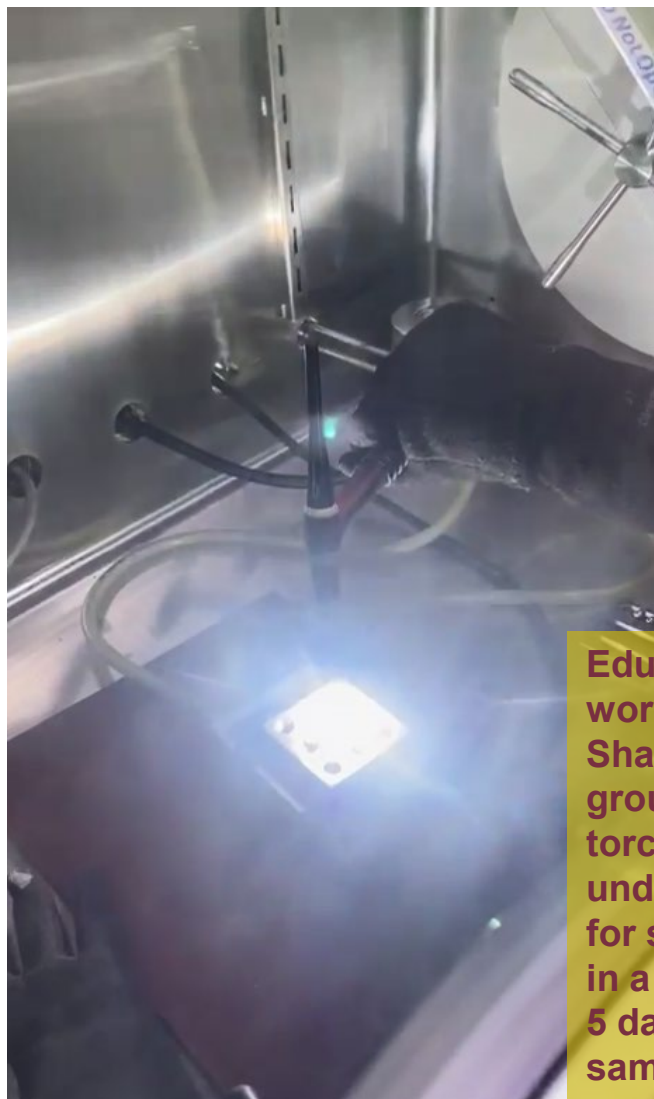
(depart 7:30 a.m. EDT for 9:00 a.m. EDT tour)



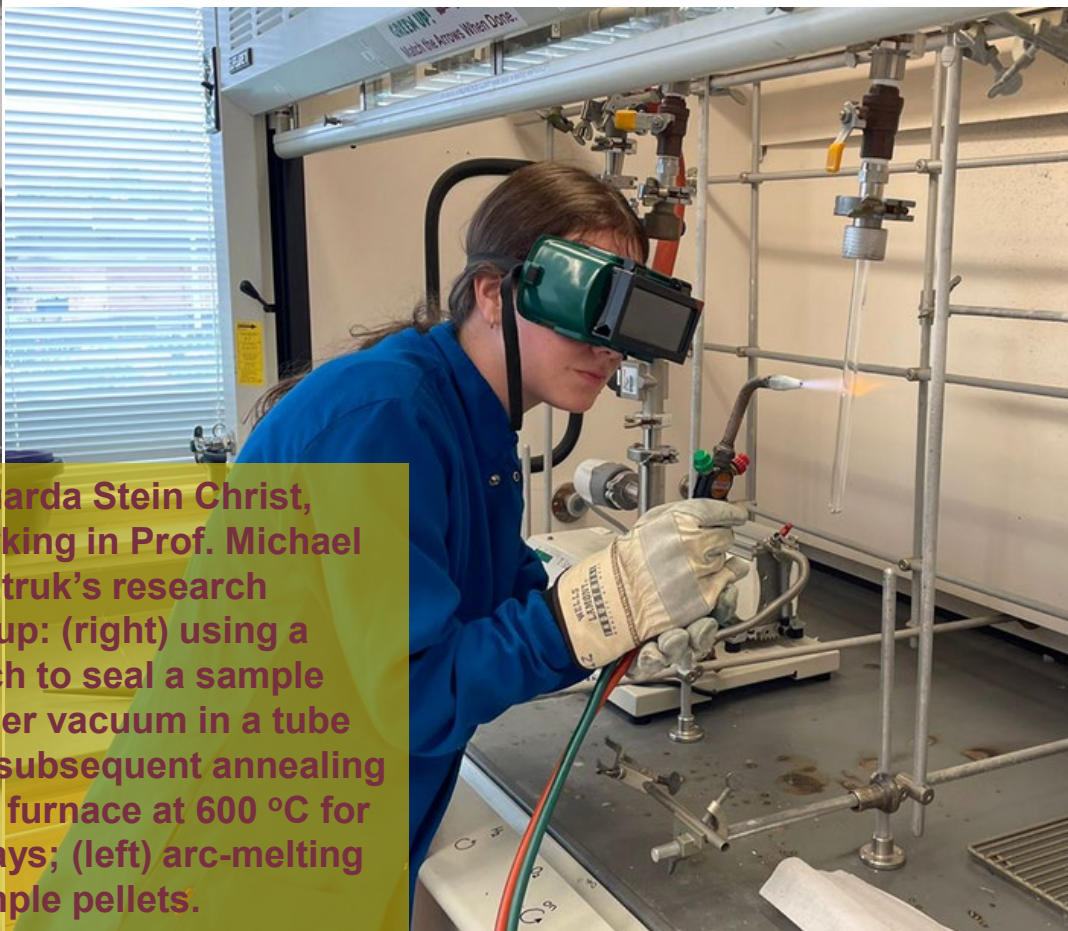


## If You Think It's Hot Outside...

June 20, 2024



Eduarda Stein Christ, working in Prof. Michael Shatruk's research group: (right) using a torch to seal a sample under vacuum in a tube for subsequent annealing in a furnace at 600 °C for 5 days; (left) arc-melting sample pellets.





# REU Weekly Seminar

## Student Research Presentations: Introductory Overviews

moderated by Ed Hilinski  
 June 21, 2024 - DLC 123, 3:30-5:00 p.m.  
*(in order of presentation)*



## **Student Research Presentation – Introductory Overview** **“Research Intro”**

**Luke Jodoin – University of Arkansas-Fort Smith**  
**Ethan Lambert & Prof. Kenneth Hanson - Florida State University**  
 June 21, 2024 - DLC 123, Tallahassee, Florida





## Student Research Presentation – Introductory Overview

### *“Investigation of Photoinduced Conversion of the Tetrathiophenalenyl Radical (TTPLY)”*

**Mariia Grebenkina – Ithaca College**



**Divya Kumar, Dibya Mondal & Prof. Michael Shatruk - Florida State University**

June 21, 2024 - DLC 123, Tallahassee, Florida

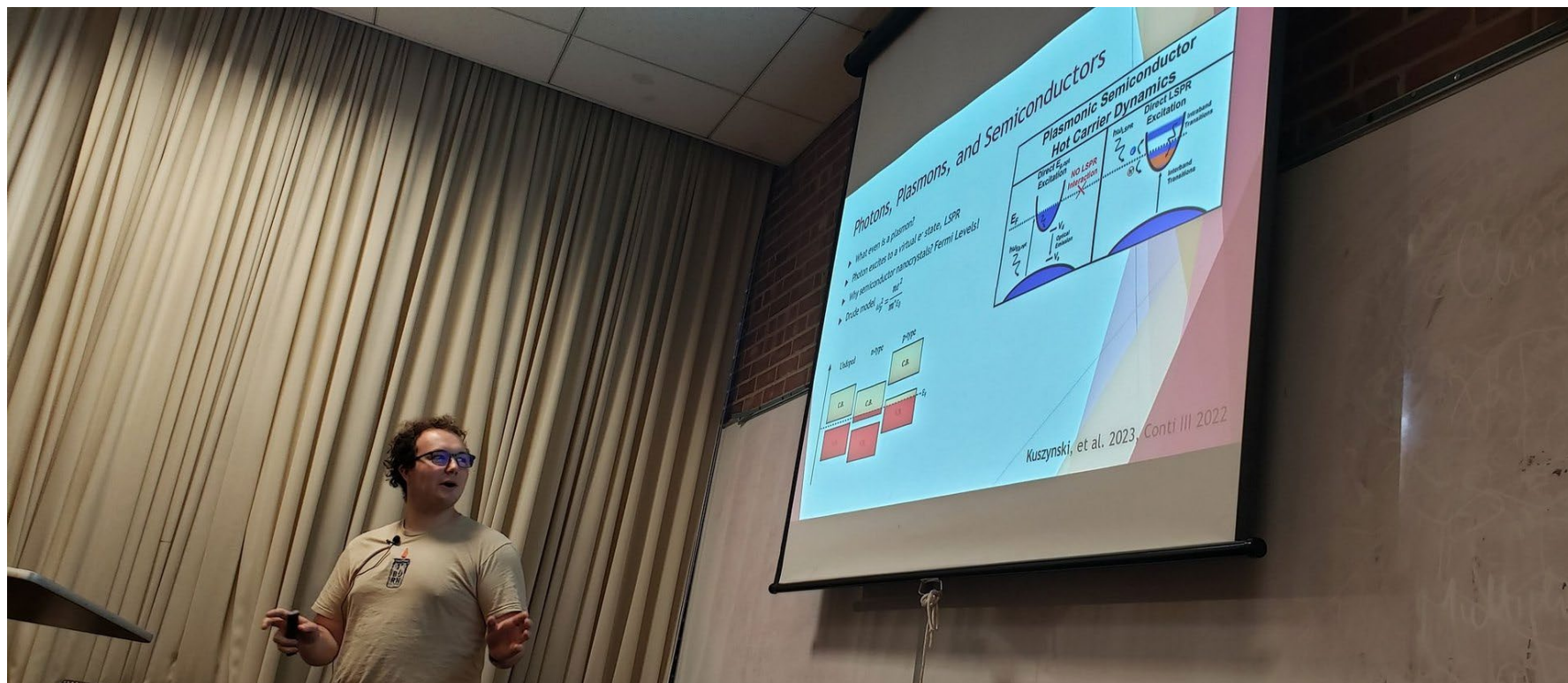


# Student Research Presentation – Introductory Overview “Investigating Carrier Mobility Through Doped Plasmonic Semiconductor Nanocrystals”

Corbin Frisvold – Kutztown University

Andrew Cantrell, Raul Ortega & Prof. Geoffrey Strouse - Florida State University

June 21, 2024 - DLC 123, Tallahassee, Florida





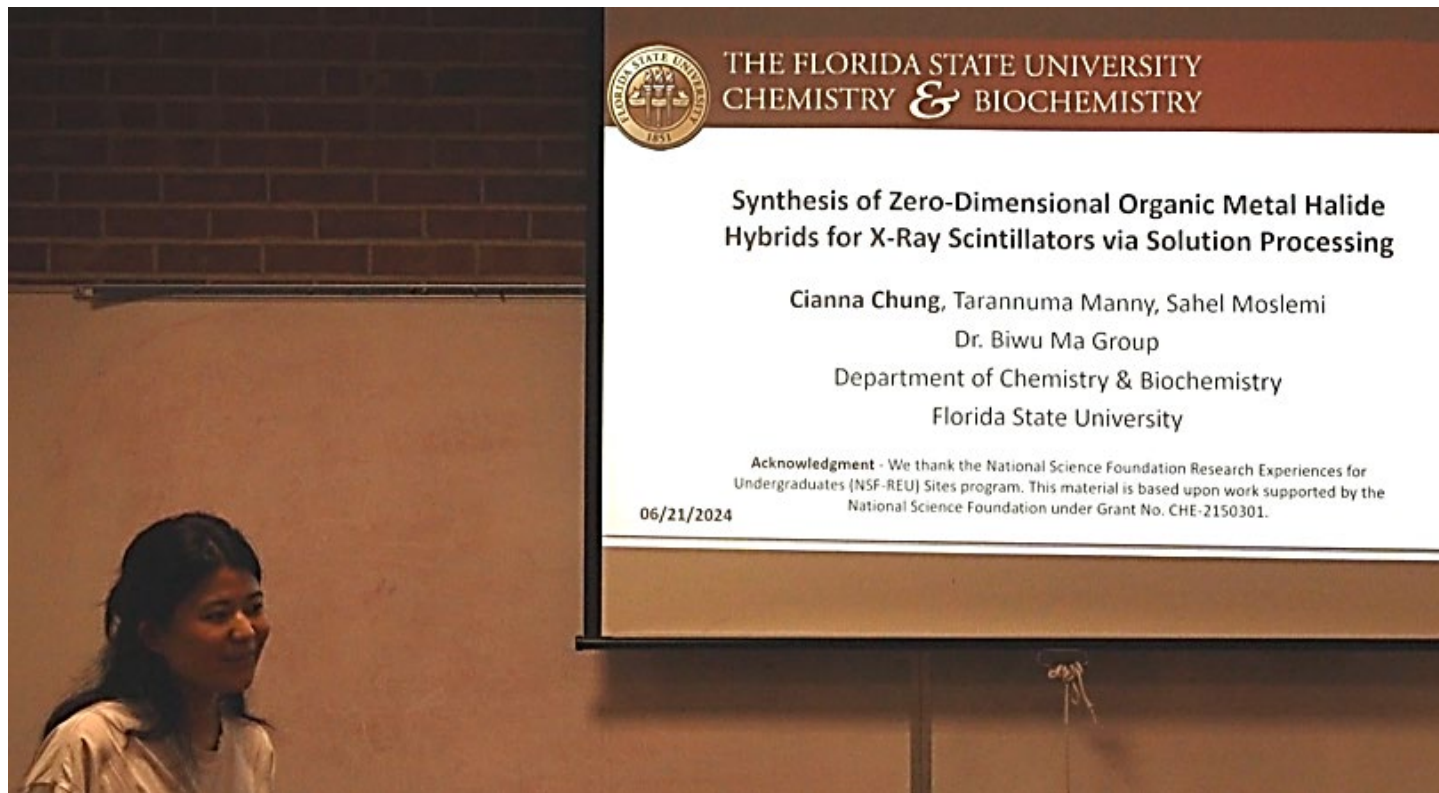
## **Student Research Presentation – Introductory Overview**


# ***“Synthesis of Zero-Dimensional Organic Metal Halide Hybrids for X-ray Scintillators via Solution Processing”***

**Cianna Chung – Ursinus College**

**Tarannuma Ferdous Manny, Sahel Moslemi & Prof. Biwu Ma - Florida State University**

**June 21, 2024 - DLC 123, Tallahassee, Florida**



 THE FLORIDA STATE UNIVERSITY  
 CHEMISTRY & BIOCHEMISTRY

**Synthesis of Zero-Dimensional Organic Metal Halide Hybrids for X-Ray Scintillators via Solution Processing**

Cianna Chung, Tarannuma Manny, Sahel Moslemi  
 Dr. Biwu Ma Group  
 Department of Chemistry & Biochemistry  
 Florida State University

Acknowledgment - We thank the National Science Foundation Research Experiences for Undergraduates (NSF-REU) Sites program. This material is based upon work supported by the National Science Foundation under Grant No. CHE-2150301.

06/21/2024



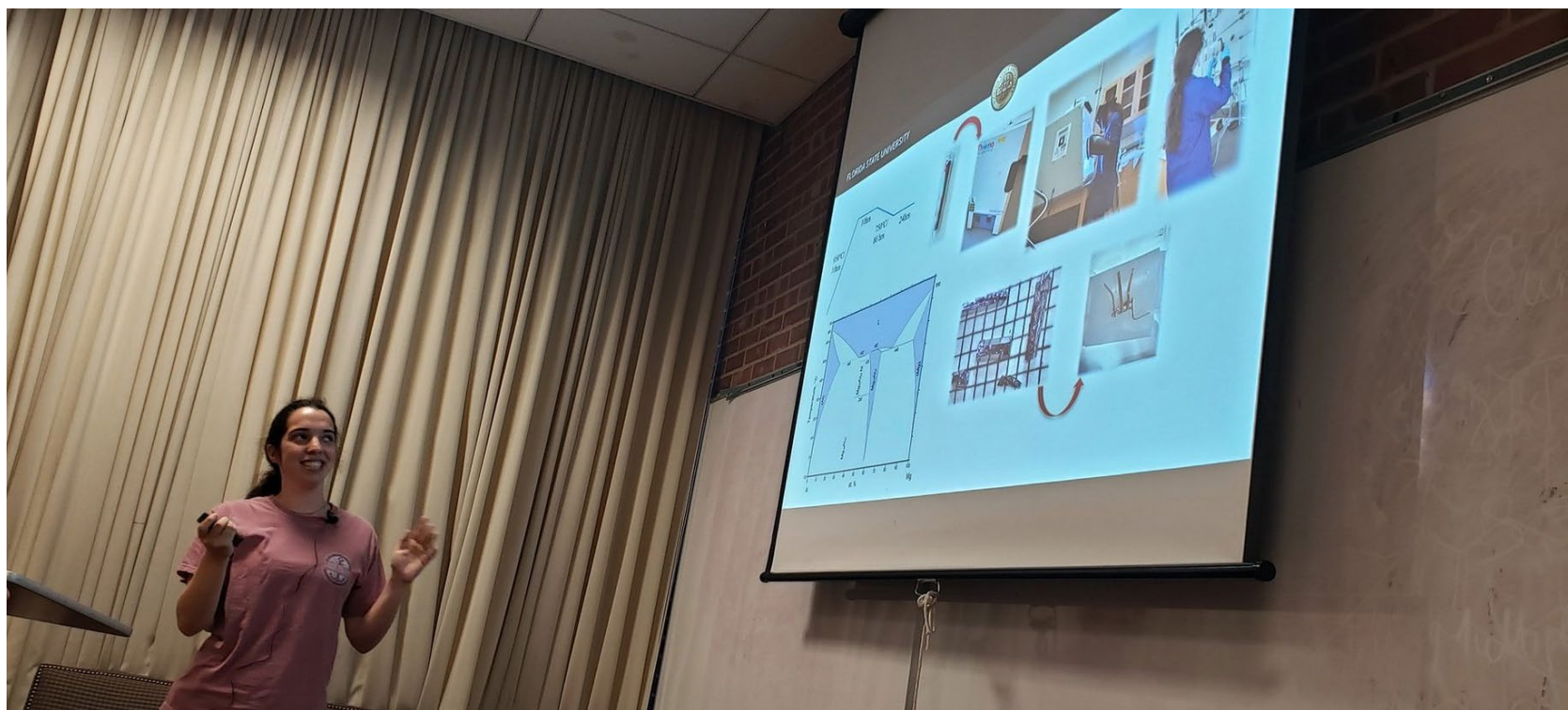
## Student Research Presentation – Introductory Overview

### ***“Synthesis and Characterization of Ba/Ca Mg Silicide Zintl Phase from Mg Flux”***

**Taylor Walker – Misericordia University**

**Amir Zarei & Prof. Susan Lattuner - Florida State University**

June 21, 2024 - DLC 123, Tallahassee, Florida





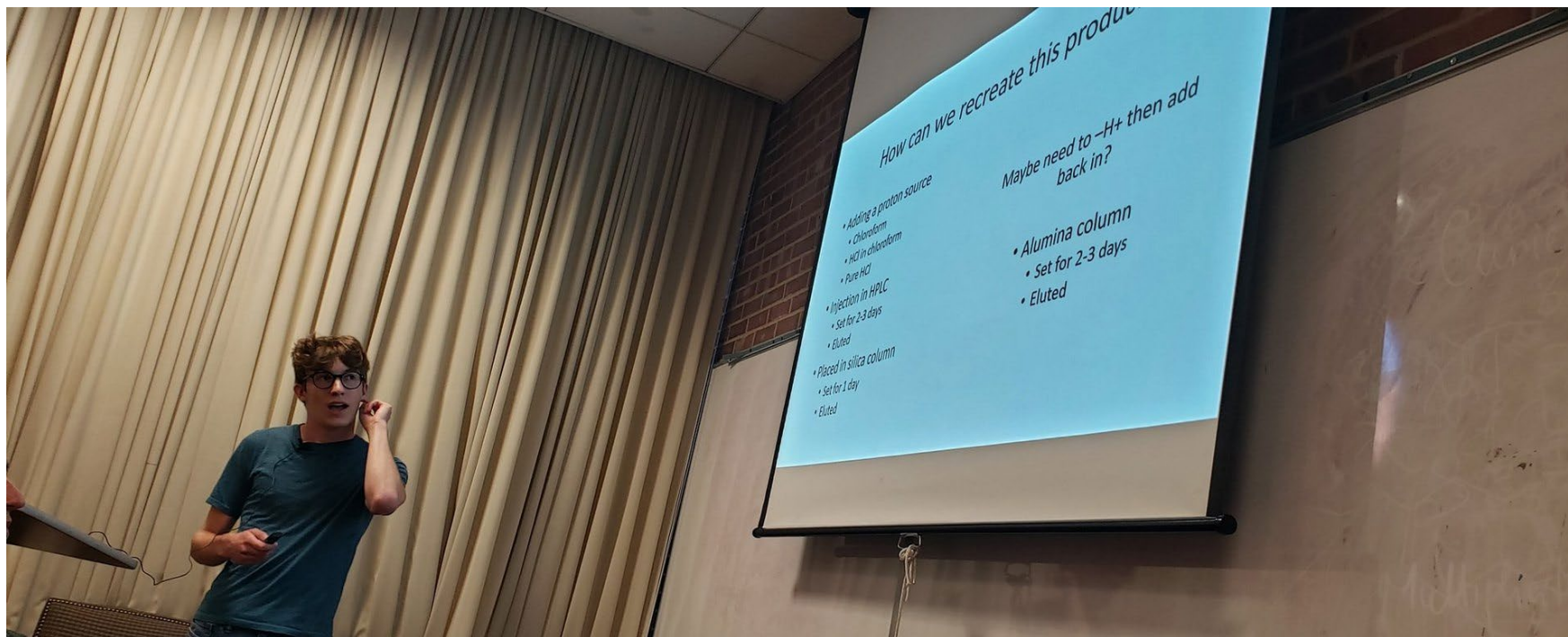
## Student Research Presentation – Introductory Overview “Synthetic Pathways to Photoactive Organic Molecules”



Brody Farace – Lafayette College

Sulthana Fehroza P.P., Fernando Melo & Prof. Jack Saltiel - Florida State University

June 21, 2024 - DLC 123, Tallahassee, Florida



# Student Research Presentation – Introductory Overview

## “Synthesis and Characterization of Organic Diradical Molecules”

**Airionna Fordham – Valdosta State University**  
**Michael Commodore, Lona Dutta & Prof. Igor Alabugin - Florida State University**  
 June 21, 2024 - DLC 123, Tallahassee, Florida





**Student Research Presentation – Introductory Overview**  
***“Photochemical Transformation of Coumarin-Substituted Triazoles  
to Pyrrolocoumarin Compounds”***

**Kaylee Head – Samford University**

**Lucy Jenkins & Prof. Lei Zhu - Florida State University**

June 21, 2024 - DLC 123, Tallahassee, Florida



## Student Research Presentation – Introductory Overview

### *“Investigation of $\text{BiCl}_5^{2-}$ as a Photocatalyst”*

Elizabeth Holyat – SUNY Binghamton University

Rachel Weiss Clark & Prof. Bryan Kudisch - Florida State University

June 21, 2024 - DLC 123, Tallahassee, Florida





# **Student Research Presentation – Introductory Overview**

## ***“Light-Induced Switching in Iron(III) Complexes with Tridentate Schiff-Base Ligands”***



**Tsion Lemi – University of Maryland, Baltimore County**

**Divya Kumar, Dibya Mondal & Prof. Michael Shatruk - Florida State University**

**June 21, 2024 - DLC 123, Tallahassee, Florida**



## Student Research Presentation – Introductory Overview “Vibronic Coupling to Hybrid Light-Matter States”

James Leone – Hendrix College

Justin Phillips & Prof. A. Eugene DePrince - Florida State University

June 21, 2024 - DLC 123, Tallahassee, Florida





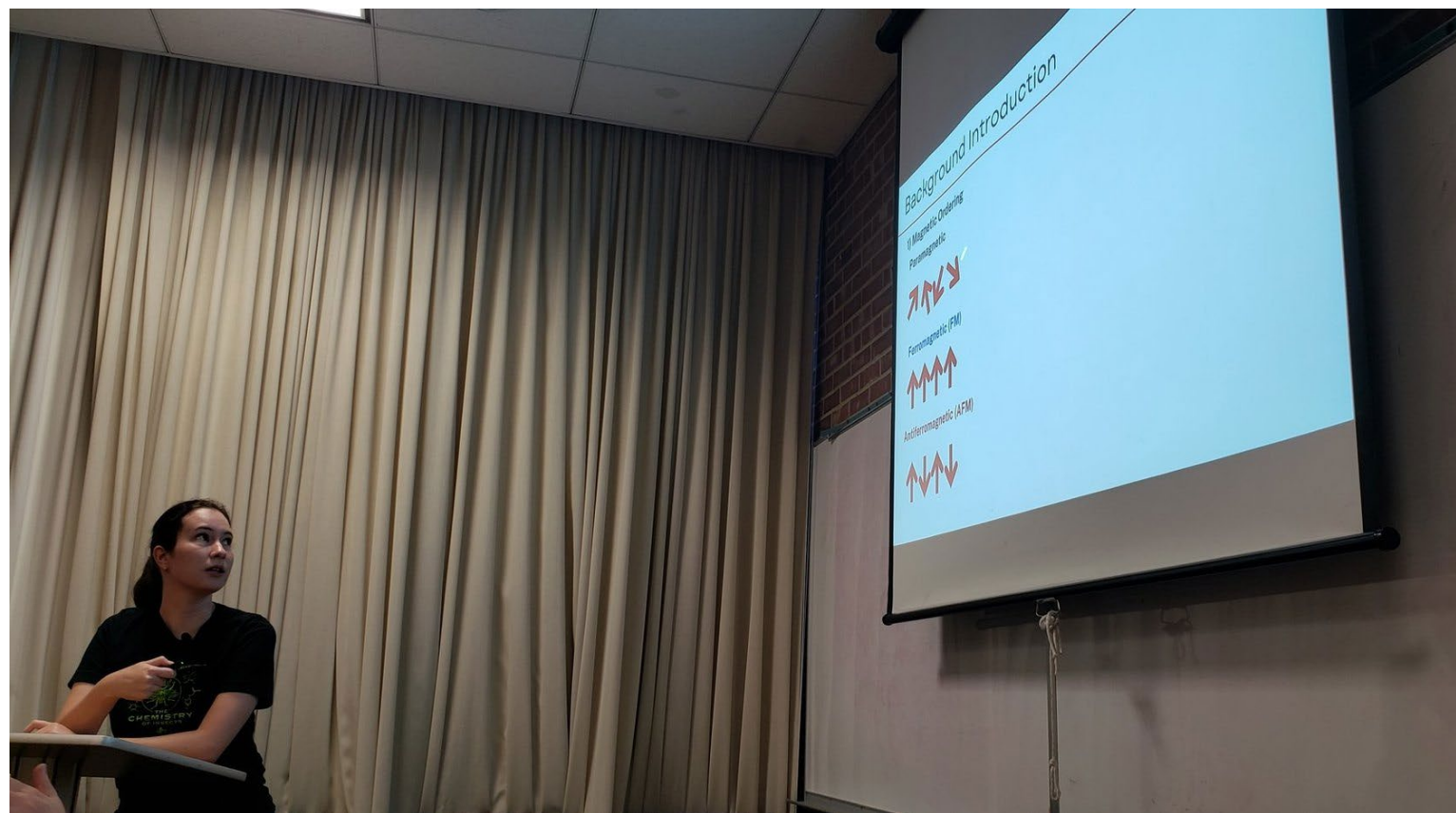
## Student Research Presentation – Introductory Overview

### *“Mapping of Magnetic Ordering in Zr Kagome Solid Solutions”*

**Eduarda Stein Christ – Texas Lutheran University**

**Victoria Li & Prof. Michael Shatruk - Florida State University**

June 21, 2024 - DLC 123, Tallahassee, Florida





## Cool Times at Florida Caverns State Park

<https://www.floridastateparks.org/parks-and-trails/florida-caverns-state-park>

June 22, 2024 - Marianna, Florida with Dr. Ed Hilinski



**Civilian Conservation Corps (CCC)  
Statue at Florida Caverns State Park**



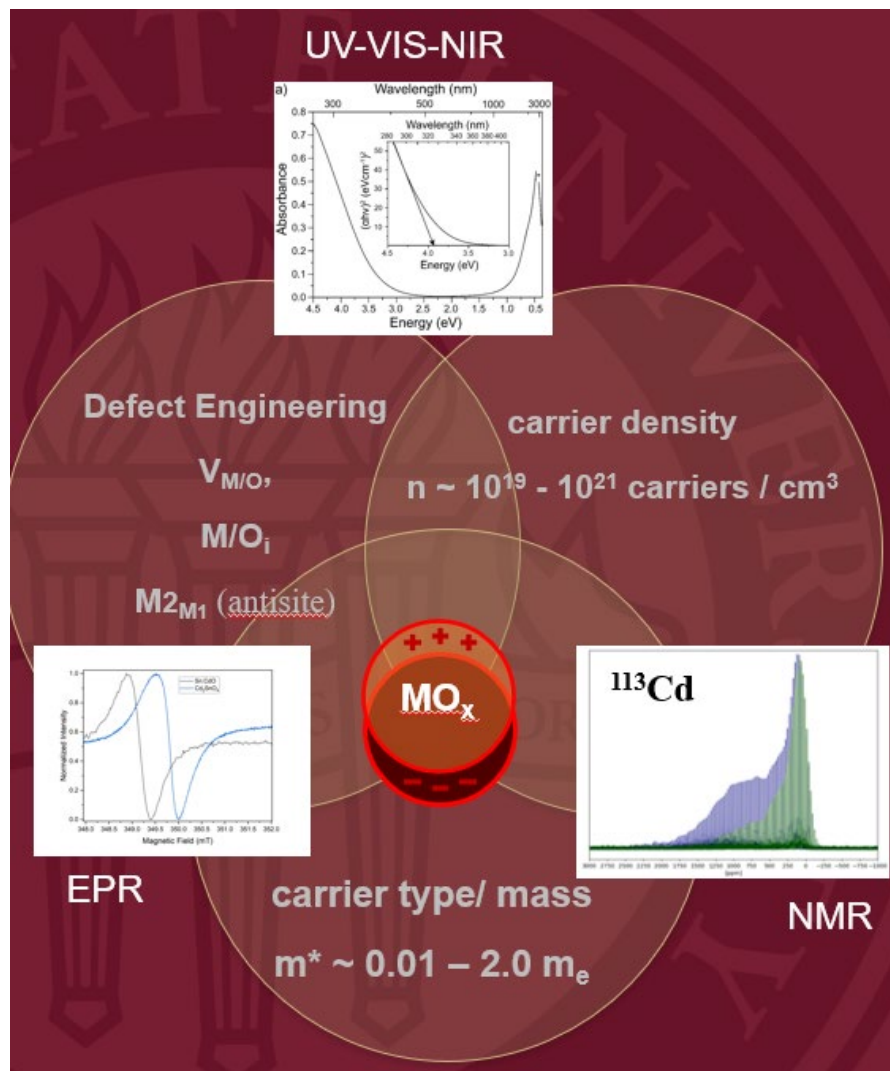


## After the Caverns, Taqueria Miranda

<https://taqueriamirandatallahassee.fl.com/>

June 22, 2024 - Tallahassee, Florida with Dr. Ed Hilinski





# Photochemistry Café

## “Plasmonic Metal Oxide Nanocrystals: How a Semiconductor Acts Like a Metal”



<http://www.chem.fsu.edu/reu-links/>

**Prof. Geoffrey Strouse**

June 25, 2024, 9:00-10:00 a.m.

DLC 123, Tallahassee, Florida







## **Photochemistry Café** **“Plasmonic Metal Oxide Nanocrystals: How a Semiconductor Acts Like a Metal”**



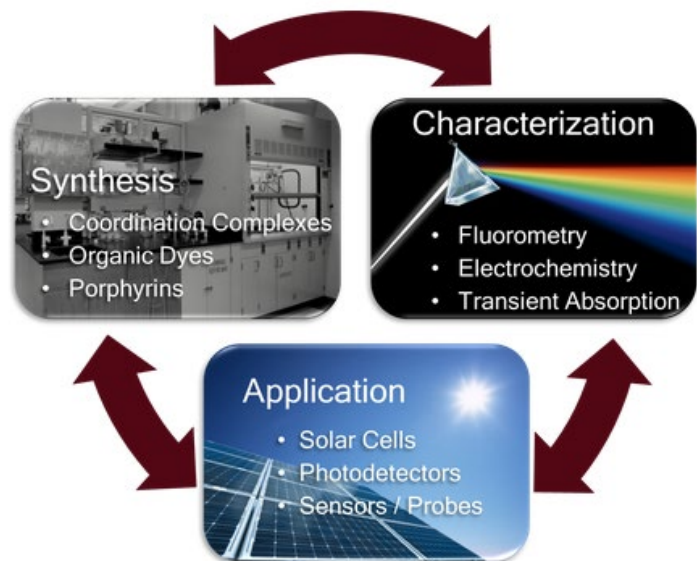
<http://www.chem.fsu.edu/reu-links/>

**Prof. Geoffrey Strouse**

June 25, 2024, 9:00-10:00 a.m.

DLC 123, Tallahassee, Florida





## Photochemistry Café

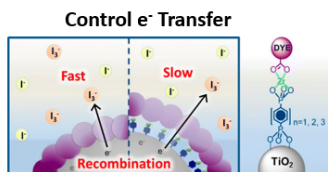
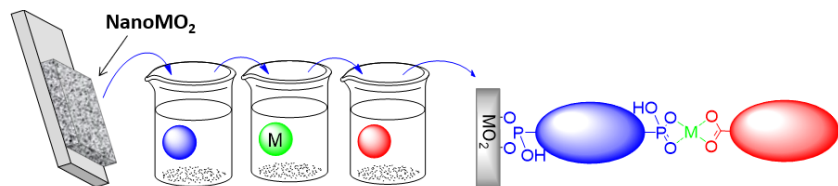
### “Understanding and Controlling Molecular Excited State Processes Using Metal Oxide Surfaces”

<http://www.chem.fsu.edu/reu-links/>

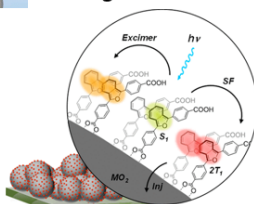
Prof. Kenneth Hanson

June 28, 2024, 3:30-4:30 p.m.

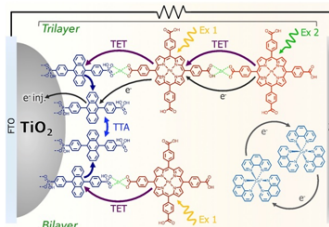
DLC 123, Tallahassee, Florida



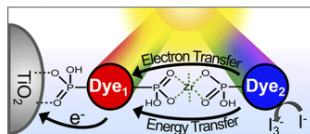
#### Singlet Fission



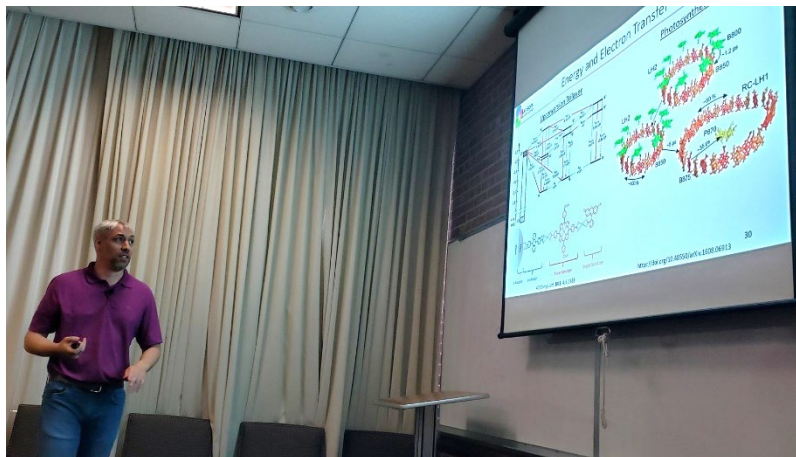
#### Photon Upconversion



#### Energy/e- Cascade







## **Photochemistry Café**

### ***“Understanding and Controlling Molecular Excited State Processes Using Metal Oxide Surfaces”***

<http://www.chem.fsu.edu/reu-links/>

**Prof. Kenneth Hanson**

June 28, 2024, 3:30-4:30 p.m.  
 DLC 123, Tallahassee, Florida



## REU Weekly Seminar

**June 28, 2024 - DLC 123, 4:30 p.m. with Dr. Ed Hilinski**  
 Discussion about activities of the preceding week and research







## On the Deck and Conversing

**June 29, 2024 - Black Dog Café,  
Tallahassee, Florida  
with Drs. Wei Yang and Ed Hilinski**





## Photochemistry Café “Graduate School Demystified”

<http://www.chem.fsu.edu/reu-links/>

**Prof. Kenneth Hanson**

July 2, 2024, 9:00-10:00 a.m.  
DLC 123, Tallahassee, Florida



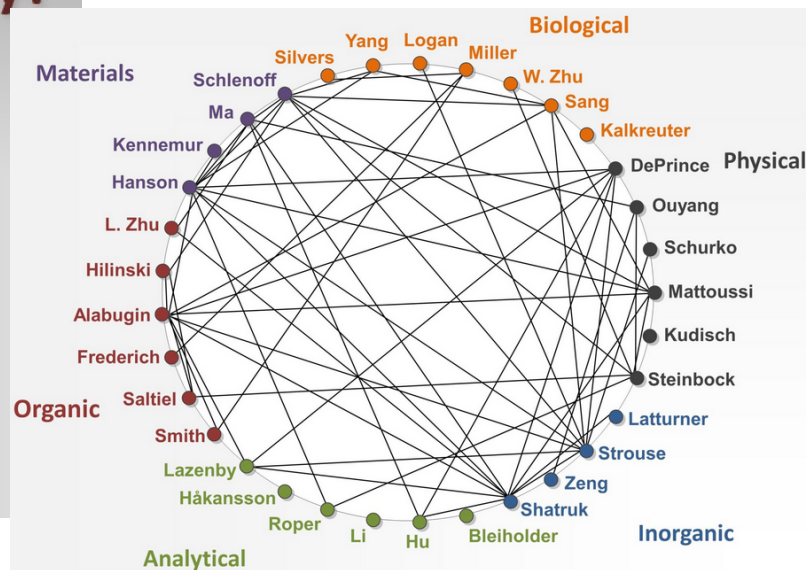
## Graduate School Demystified: Outline

- 1) Application timeline
- 2) Deciding where to apply
- 3) The application/admission process
- 4) Graduate school timeline
- 5) Graduate school summary
- 6) After your Ph.D.



## Where to Apply?

- Location
- Salary
- Department
- Resources
- Research







## Photochemistry Café “Graduate School Demystified”

<http://www.chem.fsu.edu/reu-links/>

**Prof. Kenneth Hanson**

July 2, 2024, 9:00-10:00 a.m.  
 DLC 123, Tallahassee, Florida





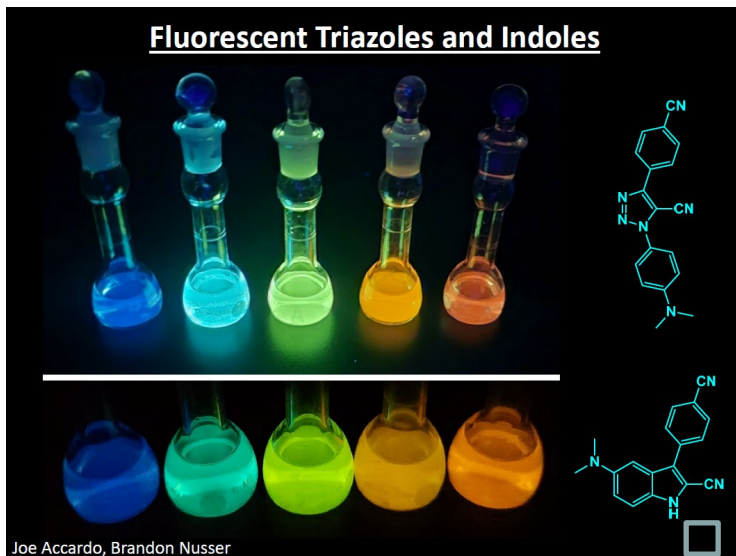
# Independence Day Picnic

**July 4, 2024**

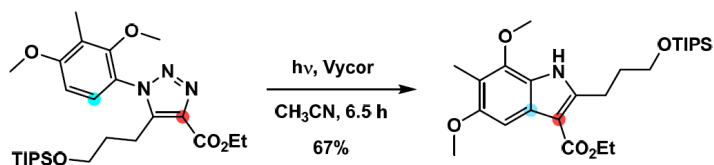
## The DePrince Residence







**An early example of triazole photoconversion to indole**



Light source?

Reaction vessel?

Concentration?

Wender and Cooper, *Tetrahedron Lett.* **1987**, 28, 6125-6128.

**Photochemistry Café**  
**“Fluorescent Organic Molecules”**

<http://www.chem.fsu.edu/reu-links/>

**Prof. Lei Zhu**

July 9, 2024, 9:00-10:00 a.m.  
DLC 123, Tallahassee, Florida



## **Photochemistry Café**

### **“Fluorescent Organic Molecules”**

<http://www.chem.fsu.edu/reu-links/>

**Prof. Lei Zhu**

July 9, 2024, 9:00-10:00 a.m.  
 DLC 123, Tallahassee, Florida





## Trip to Tyndall Air Force Base

[www.tyndall.af.mil](http://www.tyndall.af.mil)

July 11, 2024

(depart 7:40 a.m. EDT for a 10:00 a.m. CDT tour)







## ... On to Mexico Beach, Florida

<https://mexicobeach.com/>

July 11, 2024





## ... Back to Tallahassee and Taqueria Miranda

<https://taqueriamirandatallahassee.fl.com/>

July 11, 2024 - Tallahassee, Florida with Dr. Ed Hilinski

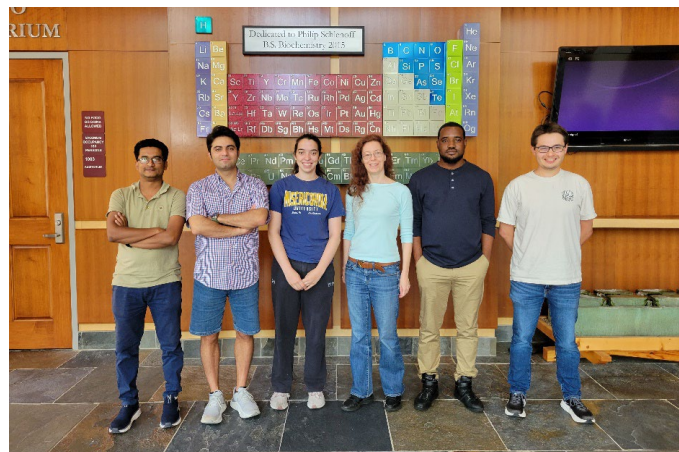
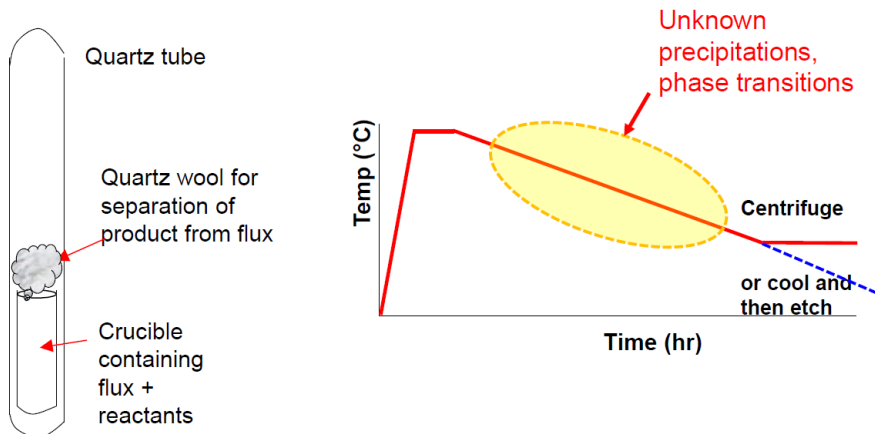


## Metal Flux Synthesis

Combine reactants, add excess amount of suitable flux metal

Heat above mp of flux, slowly cool

Centrifuge while flux still molten



## Photochemistry Café “Growth of Metal Silicides from Metal Flux Reactions”

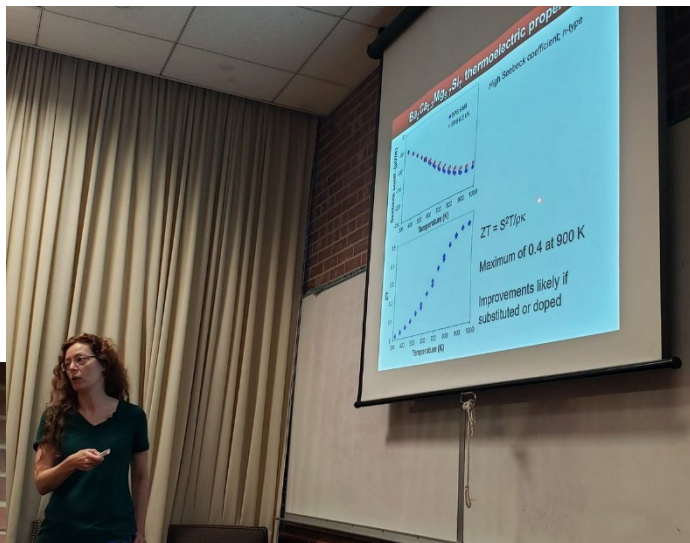
<http://www.chem.fsu.edu/reu-links/>

**Prof. Susan Lattuner**

July 12, 2024, 3:30-4:30 p.m.  
 DLC 123, Tallahassee, Florida







## Photochemistry Café “Growth of Metal Silicides from Metal Flux Reactions”

<http://www.chem.fsu.edu/reu-links/>

Prof. Susan Latturner

July 12, 2024, 3:30-4:30 p.m.





## REU Weekly Seminar

July 12, 2024 - DLC 123, 4:30 p.m. with Dr. Ed Hilinski

Discussion about activities of the preceding week and research



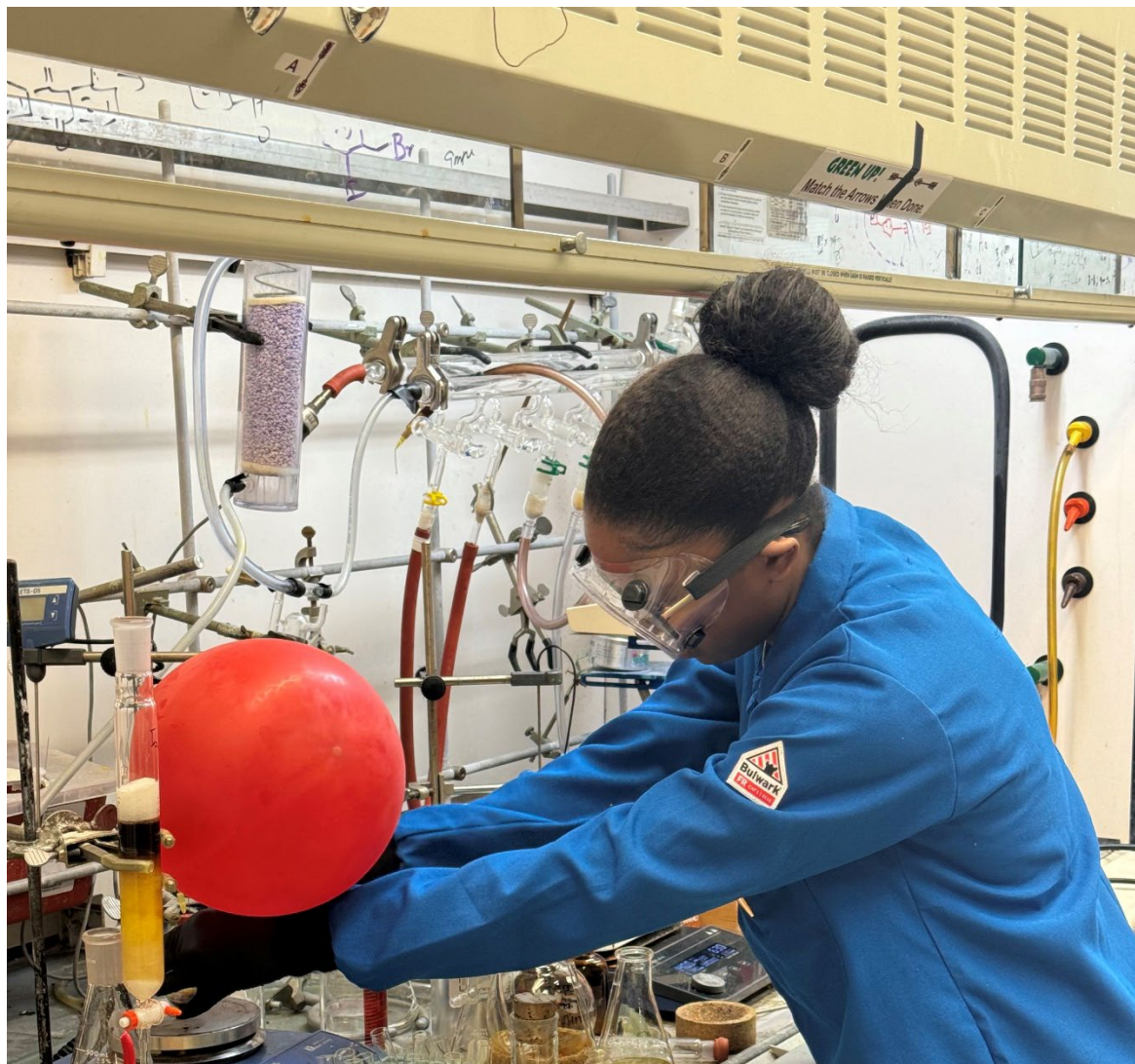


## Cooling Down Under the Oaks

July 13, 2024 - Black Dog Café, Tallahassee, Florida with Dr. Ed Hilinski







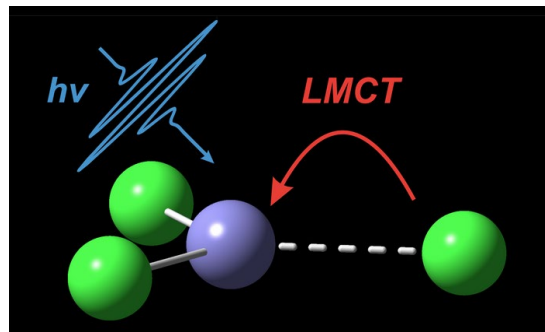
## Controlling the atmosphere for a successful outcome

July 13, 2024



Airionna Fordham, working in Prof. Igor Alabugin's research group, is setting up an air-sensitive organic reaction for her studies on syntheses and characterizations of organic diradicals.





## Photochemistry Café

### *“Research in the Kudisch Laboratory: Introduction to Photochemical and Photophysical Dynamics and Kinetics”*

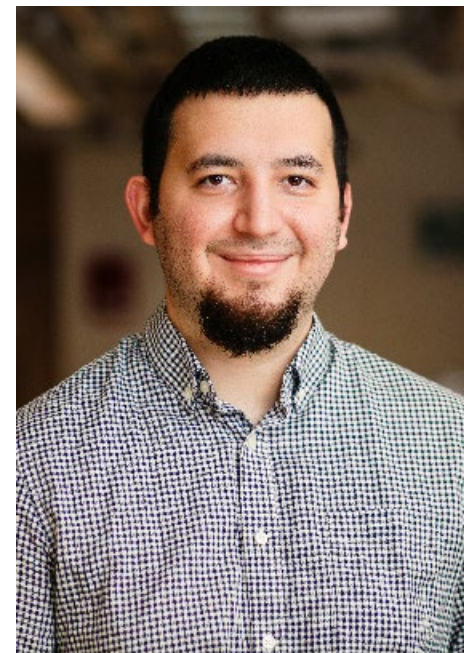
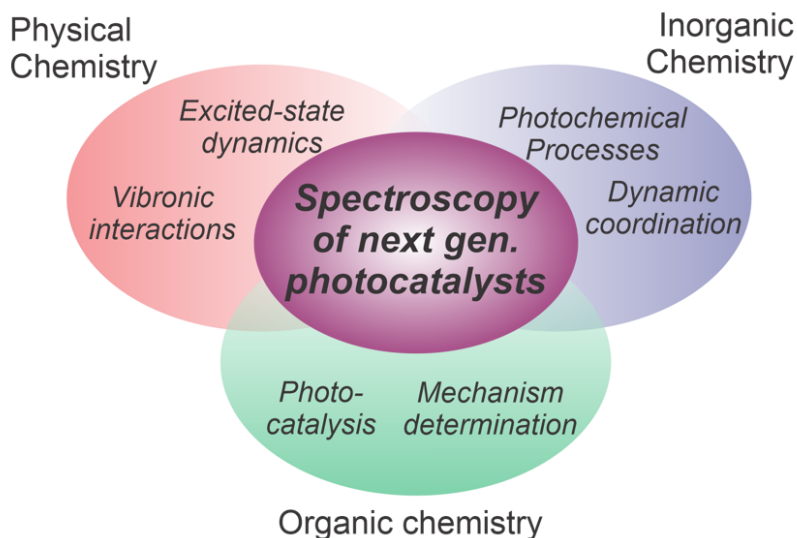
<http://www.chem.fsu.edu/reu-links/>

**Prof. Bryan Kudisch**

July 16, 2023, 9:00-10:00 a.m.  
DLC 123, Tallahassee, Florida



**At the intersection of physical, organic, and inorganic chemistry**



## Photochemistry Café

### *“Research in the Kudisch Laboratory: Introduction to Photochemical and Photophysical Dynamics and Kinetics”*

<http://www.chem.fsu.edu/reu-links/>

**Prof. Bryan Kudisch**

July 16, 2023, 9:00-10:00 a.m., DLC 123, Tallahassee, Florida





## Student Research Presentation

### *“Investigation of $\text{BiCl}_5^{2-}$ as a Photocatalyst”*

Elizabeth Holyat – SUNY Binghamton University

Rachel Weiss Clark & Prof. Bryan Kudisch - Florida State University

July 19, 2024 - DLC 123, Tallahassee, Florida





## Student Research Presentation

***“Increasing  $\text{Fe}(\text{bpy})_3^{2+}$  Excited-State Lifetime Through Surface Coordination”***

**Luke Jodoin – University of Arkansas-Fort Smith**

**Ethan Lambert & Prof. Kenneth Hanson - Florida State University**

July 19, 2024 - DLC 123, Tallahassee, Florida





## **Student Research Presentation**

### ***“Vibronic Coupling to Hybrid Light-Matter States”***

**James Leone – Hendrix College**

**Justin Phillips & Prof. A. Eugene DePrince - Florida State University**

**July 19, 2024 - DLC 123, Tallahassee, Florida**





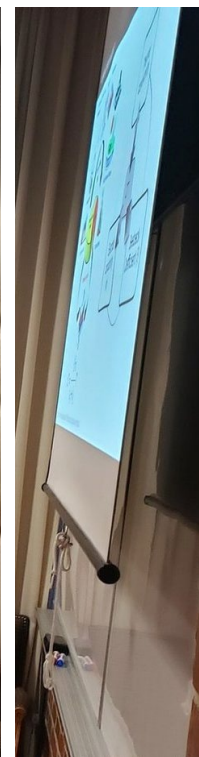
## Student Research Presentation

### ***“Synthesis and Characterization of Ba/Ca Mg Silicide Zintl Phase Crystals Grown from Mg Flux”***

**Taylor Walker – Misericordia University**

**Amir Zarei & Prof. Susan Lattuner - Florida State University**

July 19, 2024 - DLC 123, Tallahassee, Florida





## REU Weekly Seminar

July 19, 2024 - DLC 123, 4:30 p.m. with Dr. Ed Hilinski

Discussion about activities of the preceding week and research



## Saturday Morning on the Deck

July 20, 2024 - Black Dog Café, Tallahassee, Florida with Dr. Ed Hilinski



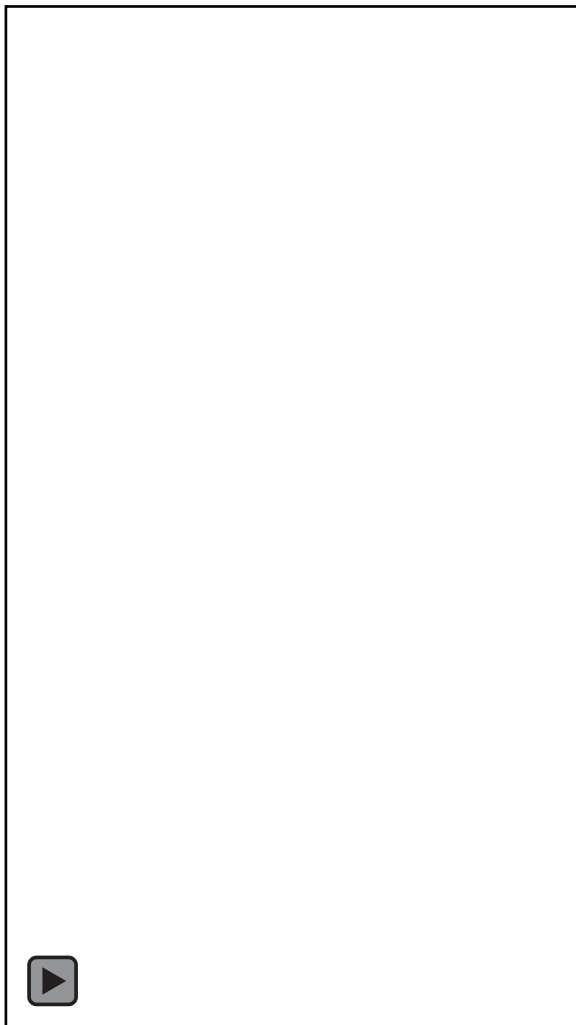


## Happy Birthday, Brody!

June 21 (on 22), 2024 – DLC 123, Tallahassee, Florida

New York-Style and Chocolate Cheesecakes from  
**Publix Bakery, Lake Ella Plaza**

<https://www.publix.com/products-services/bakery/>



Click on the image above  
to play the video.





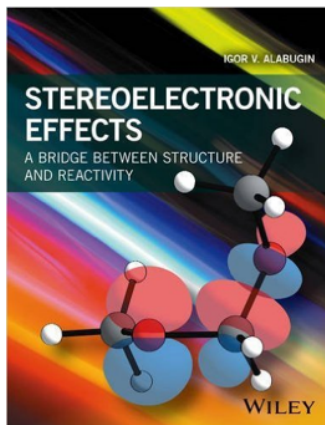
The main questions  
of chemistry:

How to **make** a bond?

How to **break** a bond?

GDCh

Books



**Photochemistry Café**  
“How to Become Famous  
(with Organic Chemistry)”

<http://www.chem.fsu.edu/reu-links/>

**Prof. Igor Alabugin**

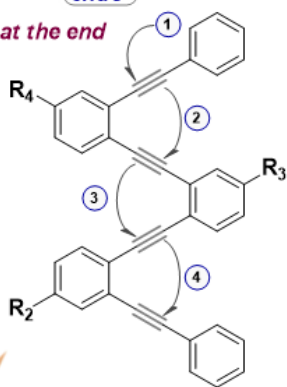
July 23, 2024, 9:00-10:00 a.m.  
DLC 123, Tallahassee, Florida



Alternative Folding Patterns:

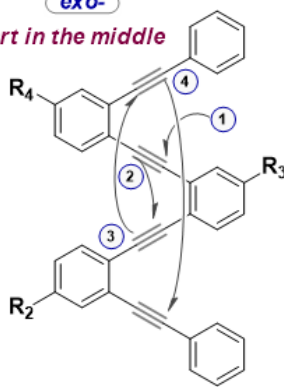
**endo-**

Start at the end



**exo-**

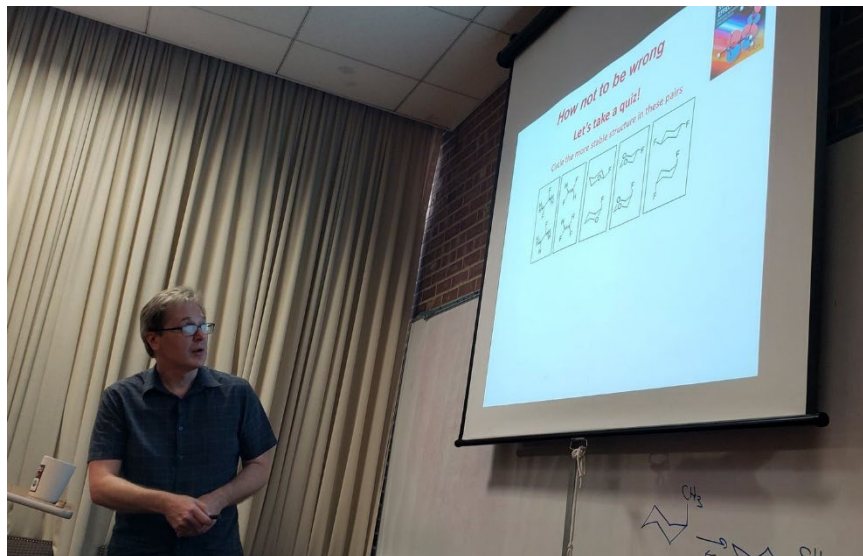
Start in the middle



$$2 + ? = 4$$







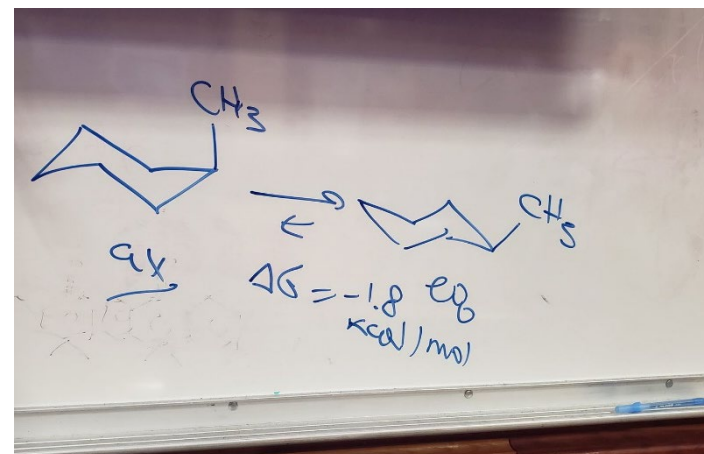
## Photochemistry Café “How to Become Famous (with Organic Chemistry)”

<http://www.chem.fsu.edu/reu-links/>

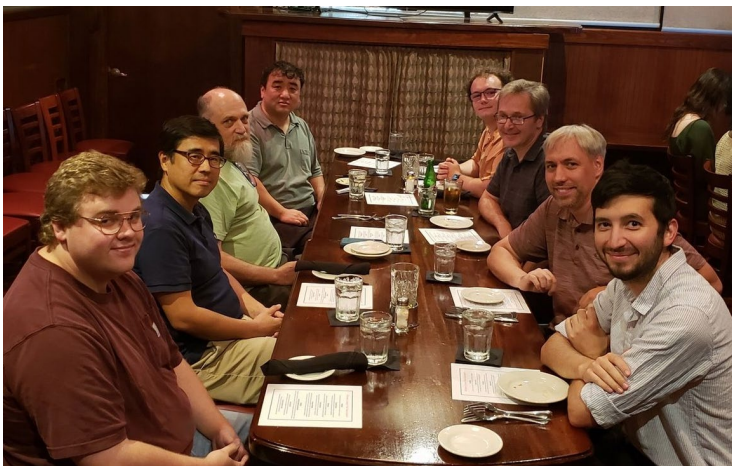
**Prof. Igor Alabugin**

July 23, 2024, 9:00-10:00 a.m.

DLC 123, Tallahassee, Florida







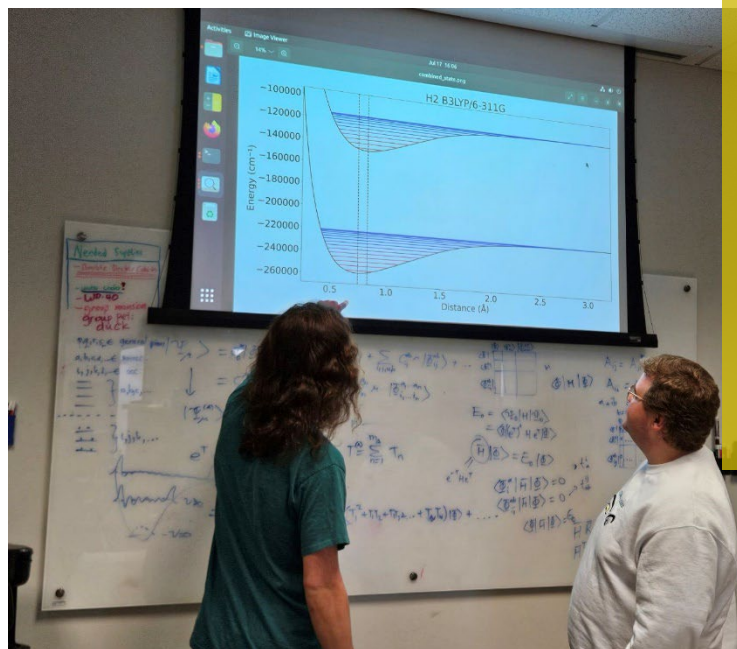
**Dinner at  
*Georgio's***  
<http://georgiostallahassee.com/>  
 with  
**REU Student Participants,  
 In-Lab Mentors &  
 Faculty Advisors**  
**July 23, 2024, 6:00 p.m.**  
**Tallahassee, Florida**



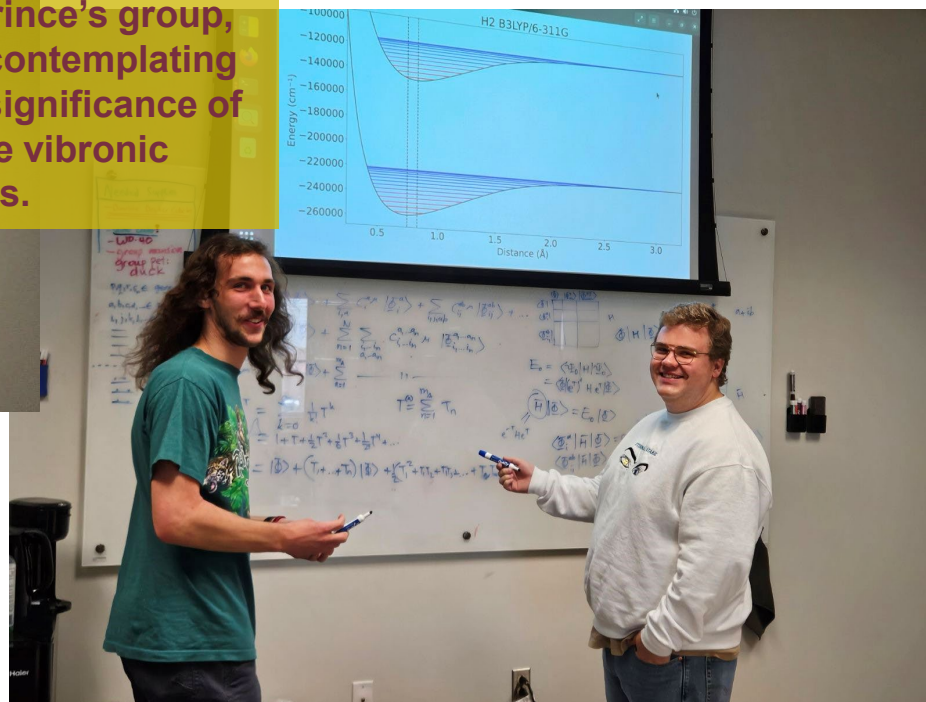


# Scrutinizing computational data!

July 24, 2024



James Leone and in-lab mentor Justin Phillips, working in Prof. Eugene DePrince's group, are contemplating the significance of these vibronic levels.



## Student Research Presentation

### ***“Mapping of Magnetic Ordering in Zr Kagome Solid Solutions”***

**Eduarda Stein Christ – Texas Lutheran University**

**Victoria Li & Prof. Michael Shatruk - Florida State University**

July 25, 2024 - DLC 123, Tallahassee, Florida





## Student Research Presentation

### *“Photodimerization of 9-Chloro-10-deuterioanthracene”*

Brody Farace – Lafayette College

Sulthana Fehroza P.P., Fernando Melo & Prof. Jack Saltiel - Florida State University

July 25, 2024 - DLC 123, Tallahassee, Florida



## **Student Research Presentation**



# ***“Efficient X-ray Scintillators Based on Solution Processed Zero-Dimensional Organic Manganese Bromide Hybrid Films”***

**Cianna Chung – Ursinus College**

**Tarannuma Ferdous Manny, Sahel Moslemi & Prof. Biwu Ma - Florida State University**

**July 25, 2024 - DLC 123, Tallahassee, Florida**





## Student Research Presentation

### *“Light-Induced Switching in Iron(III) Complexes with Tridentate Schiff-Base Ligands”*



**Tsion Lemi – University of Maryland, Baltimore County**

**Divya Kumar, Dibya Mondal & Prof. Michael Shatruk - Florida State University**

July 25, 2024 - DLC 123, Tallahassee, Florida



## Student Research Presentation – Introductory Overview

### *“Synthesis and Characterization of Organic Diradicals”*

**Airionna Fordham – Valdosta State University**

**Michael Commodore, Lona Dutta & Prof. Igor Alabugin - Florida State University**

July 26, 2024 - DLC 123, Tallahassee, Florida





## Student Research Presentation – Introductory Overview *“Photochemical Conversion of Triazole Derivatives”*

**Kaylee Head – Samford University**

**Lucy Jenkins & Prof. Lei Zhu - Florida State University**

July 26, 2024 - DLC 123, Tallahassee, Florida



## **Student Research Presentation – Introductory Overview**

### ***“Comparative Coordination Chemistry of Tridentate Pyridyl-Thioether Ligands”***

**Mariia Grebenkina – Ithaca College**

**Dibya Mondal, Miguel Gakiya-Teruya & Prof. Michael Shatruk - Florida State University**

**July 26, 2024 - DLC 123, Tallahassee, Florida**





# **Student Research Presentation – Introductory Overview**

## ***“Investigating Carrier Properties in n-Type Plasmonic Semiconducting Metal-Oxide Nanocrystals (PSCNs)”***

### **Corbin Frisvold – Kutztown University**



**Raul Ortega, Andrew Cantrell & Prof. Geoffrey Strouse - Florida State University**  
 July 26, 2024 - DLC 123, Tallahassee, Florida



## REU Weekly Seminar

July 26, 2024 - DLC 123, 4:30 p.m. with Dr. Ed Hilinski

Discussion about activities of the preceding week and research





## Getting the Sample and the Laser System Ready

July 26, 2024



Elizabeth Holyat, working in Prof. Bryan Kudisch's laboratory with in-lab mentor Rachel Weiss, are preparing for a laser spectroscopic study.





# What May be Our Penultimate Saturday Morning Gathering for Coffee, Conversation & Camaraderie



July 27, 2024 - Black Dog Café, Tallahassee, Florida  
 with Drs. Jack Saltiel, Wei Yang & Ed Hilinski





## One More Photo

July 27, 2024 - Black Dog Café, Tallahassee, Florida  
with Drs. Jack Saltiel, Wei Yang & Ed Hilinski





## Back to Ragans Hall 3 (C) Courtesy of the Physics Van

July 27, 2024 - Ragans Hall 3 (C), 923 Learning Way, Tallahassee, Florida  
 with driver Dr. Ed Hilinski

