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

(updated June 11, 2025 at 2:30 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

Acknowledgment: We thank the NSF-Research Experiences for Undergraduates (REU) Sites program. This material is based upon work supported by the NSF under Grant CHE-2150301.

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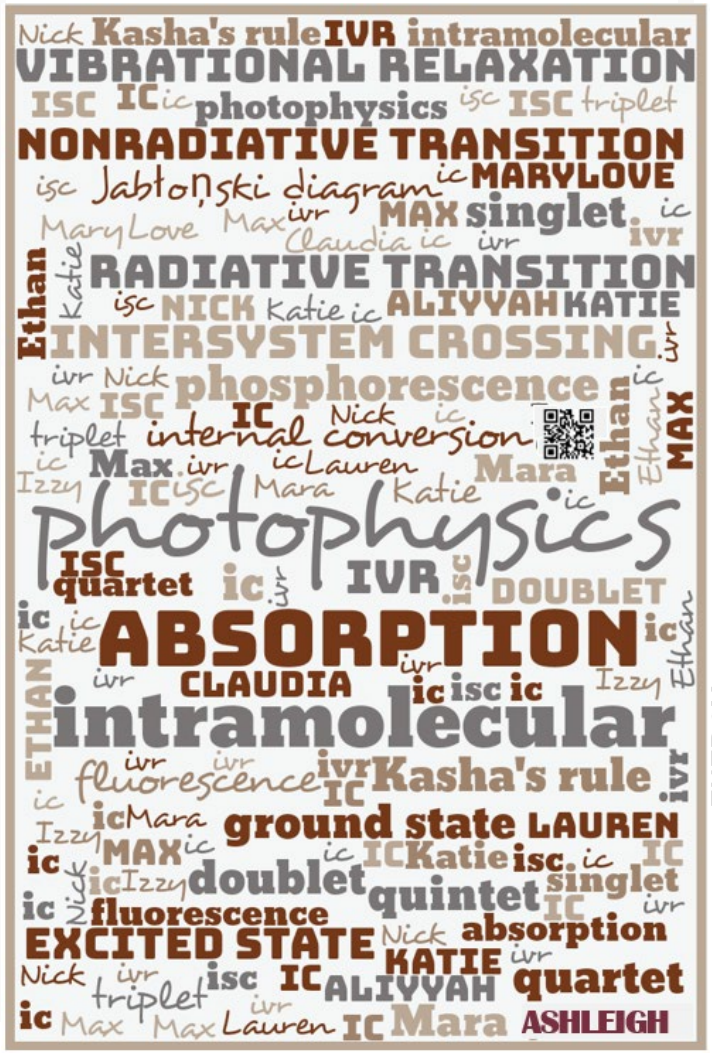

Summer 2025 - May 27 to Aug 1

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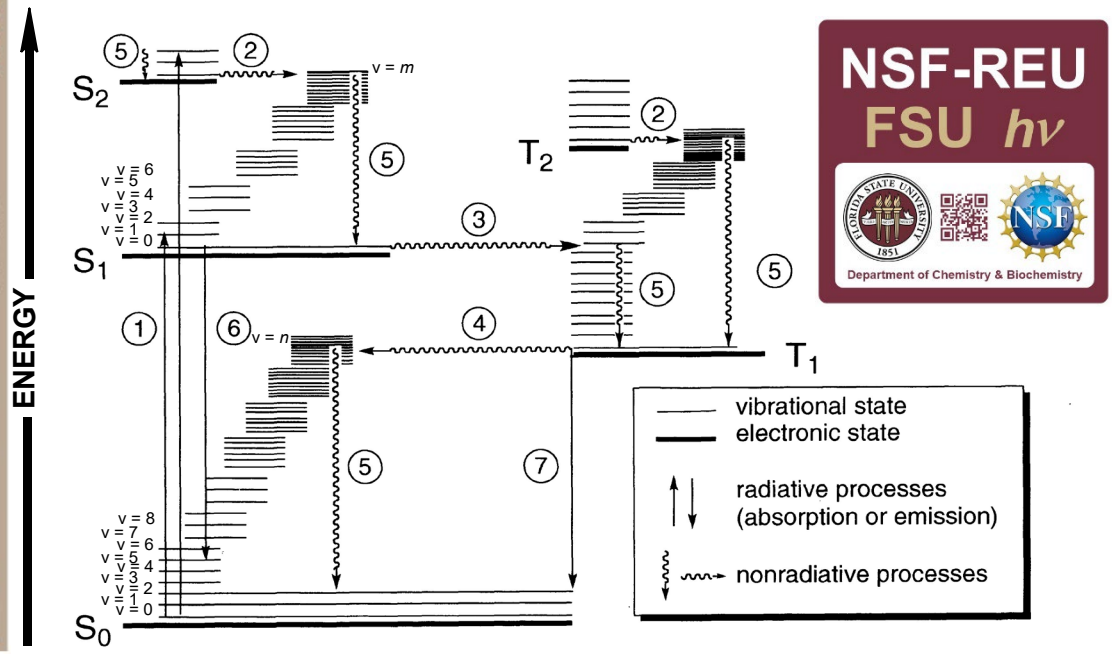


A Chronology

First Day - May 27, 2025 – Welcome!

REU Particpant	Home Institution	In-Lab Mentor	Faculty Advisor
Mara Connelly	Shippensburg University	Lucy Jenkins	Lei Zhu
Katie Crouch	University of Houston	Stephen Yuwono	Eugene DePrince
Ethan Dailey	Univ. Tennessee at Chattanooga	Sarah D. Bennett	Geoffrey Strouse
MaryLove Han	Berry College	Justin Oh & Femi Araoyinbo	Susan Latturner
Maxwell Kovall	Miami University (Ohio)	Sulthana Fehroza P P & Sumesh Babu Krishnan	Jack Saltiel & Ed Hilinski
Lauren Noggle	University of West Florida	Mohammad Khizr & Sahel Moslemi	Biwu Ma
Nicholas Paris	California State Univ., San Marcos	Thomas Brumback & Rachel Clark	Bryan Kudisch
Aliyyah Roberson	Univ. Maryland, Baltimore County	Ethan Lambert & Holly Konrad	Kenneth Hanson
Ashleigh Roberts	New College of Florida	Shubham Bisht & Divya Kumar	Michael Shatruk
Isabella Thompson	Kenyon College	Favour Makurvet & Fabiola Rivera	Igor Alabugin
Claudia Woody	Florida State University	Sulthana Fehroza P P & Sumesh Babu Krishnan	Jack Salltiel & Ed Hilinski

Wednesday, May 21, 2025

12:00 noon-1:00 p.m. In-Lab Mentors Workshop – CSL 1005
– Drs. Bridget DePrince & Ed Hilinski

First Week Agenda

Tuesday, May 27, 2025

8:45-9:00 a.m.	REU Students Walk to CSL from Ragans Hall – Dr. Bridget DePrince
9:00-9:30 a.m.	Breakfast / Mingling – CSL 1005
	Welcome and Introduction to the Department – CSL 1005
	Dept. Chair Wei Yang & Ed Hilinski
9:30-10:00 a.m.	Ice Breaker: Participants, Faculty Advisors and In-Lab Mentors
	Introductions
10:00-11:00 a.m.	In-Lab Mentors take their REU Students to their Labs
11:00-12:00 noon	Departmental Paperwork, HR & FSU Card Center
12:00-1:00 p.m.	Group Lunch – Testing the Meal Plan
	FSU Student Union
1:30-2:30 p.m.	Safety Training – Andrew Davis and Emily Wakefield
	FSU Environmental Health & Safety – CSL 1005
2:30-4:00 p.m.	More Discussion: First Day Issues –
	Dr. Ed Hilinski – CSL 1005

First Week Agenda *(continued)*

Wednesday, May 28, 2025

Work in the Research Labs

3:30-4:30 p.m. Departmental Ice Cream Social - CSL Lobby

Thursday, May 29, 2025

Work in the Research Labs

Friday, May 30, 2025

Work in the Research Labs

3:30-5:00 p.m. REU Weekly Seminar - Dr. Ed Hilinski in CSL 1005

- 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

Saturday, May 31, 2025

11:00 a.m. Coffee & Tea Conversations at Black Dog Café
- Drs. Bridget DePrince and Ed Hilinski

Weeks 2 - 10

	Date	Activity	Location, time
Week 2	T June 3	Photochemistry Café - Dr. Kenneth Hanson	CSL 1005, 9:00 a.m.
		Tour of Chemistry & Biochemistry Instrumentation Labs – Ken Hanson	CSL 1005, 10:00 a.m.
	F June 6	Photochemistry Café - Dr. Geoffrey Strouse	CSL 1005, 3:30 p.m.
		REU Seminar - Ed Hilinski - discussion of research presentations	
	Sa June 7	Coffee & Tea Conversations - Drs. Wei Yang & Ed Hilinski	Black Dog Café 11:00 a.m.
		River Boat Ride, Swimming, and Dining at Wakulla Springs, FL	1:00 p.m.
Week 3	T June 10	Photochemistry Café – Dr. Eugene DePrince - w/breakfast	CSL 1005, 9:00 a.m.
	W June 11	Tour of the Magnet Lab at 10:00 a.m.—meet in CSL Lobby at 9:30 a.m.	
	F June 13	REU Seminar (discussion of student research themes)-Ed Hilinski *CSL 1003*, 3:30 p.m.	
	Sa June 14	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 4	T June 17	Photochemistry Café - Dr. Michael Shatruk	CSL 1005, 9:00 a.m.
	W June 18	Tour of Nammo Perry Inc (depart at 7:30 am for tour at 9 am)	Perry, FL
	F June 20	REU Seminar (3-min student presentations: research themes)	CSL 1005, 3:30 p.m.
	Sa June 21?	Florida Caverns State Park - Dr. Ed Hilinski	2:00 p.m.
Week 5	T June 24	*Photochemistry Café - Dr. Biwu Ma*	CSL 1005, 9:00 a.m.
	F June 27	Photochemistry Café - Dr. Jack Saltiel – with snacks	CSL 1005, 3:30 p.m.
		REU Seminar – Weekly Update with Ed Hilinski	
	Sa June 28?	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 6	T July 1	*Photochemistry Café – Dr. Bryan Kudisch - w/breakfast*	CSL 1005, 9:00 a.m.
	F July 4	FSU Closed in Observance of Independence Day	
	Su July 6	Independence Day picnic (by invitation) 4:00 p.m.	DePrince Residence
Week 7	T July 8	*Photochemistry Café - Dr. Lei Zhu - w/breakfast*	CSL 1005, 9:00 a.m.
	R July 10 ?	*Tyndall Air Force Base (depart 8:40? am EDT for a 10:00 am CDT tour)*	Tyndall, FL
	F July 11	*Photochemistry Café - Dr. Susan Latturner*	CSL 1005, 3:30 p.m.
		REU Seminar - Dr. Ed Hilinski - weekly review and update	
	Sa July 12?	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 15	*Photochemistry Café - Dr. Kenneth Hanson* *Graduate School Demystified*	CSL 1005, 9:00 a.m.
	F July 18	REU seminar (student 15-min research presentations) 1. REU Student 1 2. REU Student 2 3. REU Student 3	CSL 1005, 3:30 p.m.
	Sa July 19?	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 9	T July 22	*Photochemistry Café - Dr. Igor Alabugin - w/breakfast*	CSL 1005, 9:00 a.m.
	T July 22	Dinner with REU Students, In-Lab Mentors & Faculty	to be set, 6:00 p.m.
	R July 24	REU seminar (student 15-min research presentations) 4. REU Student 4 5. REU Student 5 6. REU Student 6	CSL 1005, 3:30 p.m.
	F July 25	REU seminar (student 15-min research presentations) 7. REU Student 7 8. REU Student 8 9. REU Student 9 10. REU Student 10	CSL 1005, 3:30 p.m.
	Sa July 26?	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	11:00 a.m.
Week 10	T July 29	*Photochemistry Café - Dr. Ed Hilinski - w/breakfast*	CSL 1005, 9:00 a.m.
	R July 31	Poster Session (student research presentations)	CSL lobby, 3:00 p.m..
	F Aug 1	Exit interviews and surveys	CSL Floor Conf. Rm.
	F Aug 1	REU seminar	CSL 1005, 3:30 p.m.
		First Friday Festivities	6:30 p.m.
	Sa Aug 2?	Coffee & Tea Conversations - Dr. Ed Hilinski at Black Dog Café	10:00 a.m.
	SaSu Aug 2-3	Student departures	

REU In-Lab Mentors Workshop

May 21, 2025 - Chemical Sciences Laboratory (CSL) Room 1005
with Drs. Bridget DePrince and Ed Hilinski

left to right: Sulthana Fehroza P P; Sumesh Babu Krishnan; Lucy Jenkins; Rachel Weiss; Fabiola Rivera; Favour Makurvet; Shubham Bisht; Divya Kumar; Ethan Lambert; Holly Konrad; Femi Araoyinbo; Mohammad Khizr; Sarah Bennett; Justin Oh; Stephen Yuwono; Thomas Brumback; Bridget DePrince


MaryLove Han
Lauren Noggle
Ed Hilinski
Ashleigh Roberts
Nick Paris
Izzy Thompson
Aliyyah Roberson
Mara Connelly
Max Kovall
Katie Crouch

First Day in Tallahassee… Dinner !

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

Enjoying Some Conversation and Beverages

May 26, 2025 - Black Dog Café, Tallahassee, Florida with Drs. Bridget DePrince and Ed Hilinski

Lunch before Shopping for Residence Hall Supplies

May 26, 2025 – Midtown Caboose Restaurant, Tallahassee, Florida with Dr. Ed Hilinski

Dinner Out Before the Meal Plan Starts

May 26, 2025 – The Monroe Restaurant, Tallahassee, Florida with Dr. Ed Hilinski

After a Morning Orientation Session, Lunch with Dining Dollars at the Student Union

May 27, 2025 – FSU Student Union, Tallahassee, Florida with Dr. Ed Hilinski

Back at It… Safety Training

May 27, 2025 – Chemical Sciences Laboratory (CSL) Room 1005
with Andrew Davis and Emily Wakefield

Ice Cream Social

May 28, 2025 – 3:30 to 4:30 p.m. in the CSL Lobby

Everyone in the FSU Chemistry & Biochemistry Community is invited.

REU Weekly Seminar

May 30, 2025 – CSL 1005, 3:30-5:00 p.m. with Dr. Ed Hilinski

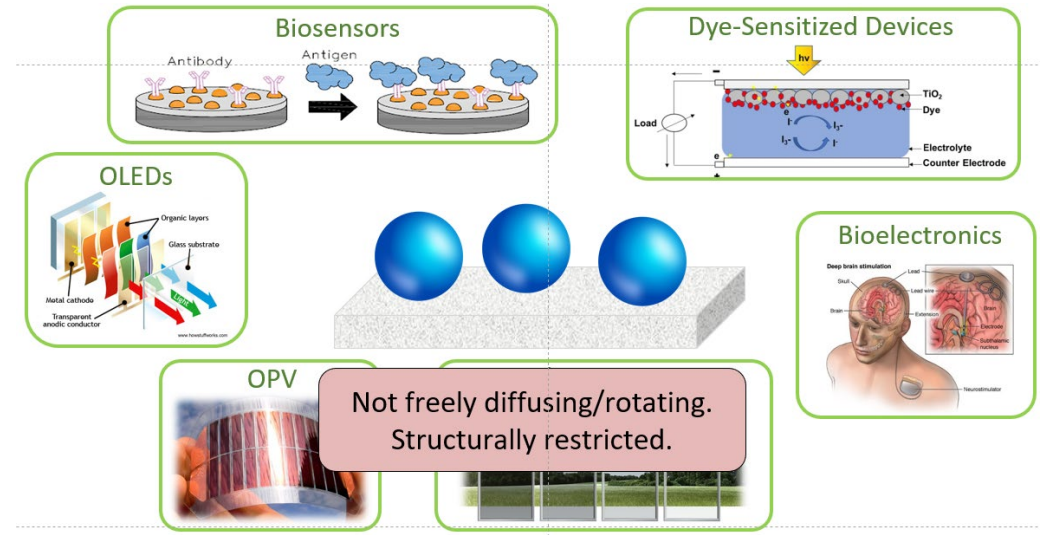
Entry survey, entry quiz, summary of the first week, research ethics, lab culture, lab notebooks, expectations, Research resources, tutorials, learning beyond lab, SciFinder Scholar, NMR training, ChemDraw, other software

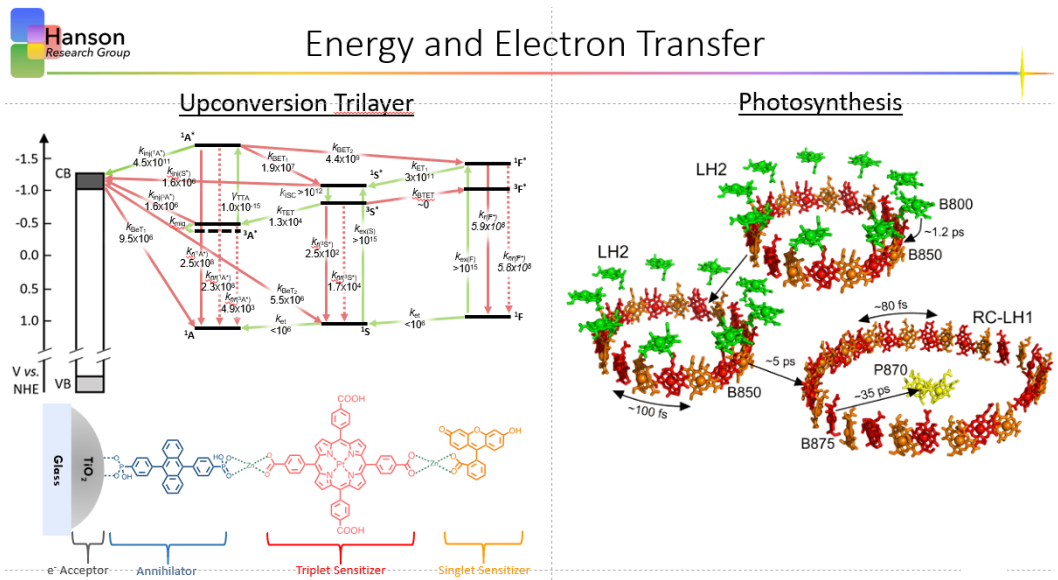
https://guides.lib.fsu.edu/c.php?g=352310&p=2380486

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

The Weekend:
Beverages and Catching Up

May 31, 2025 – Black Dog Café, Tallahassee, Florida with Dr. Ed Hilinski





ACS Energy Lett. **2019**, 4, 6, 1458

https://doi.org/10.48550/arXiv.1608.06913

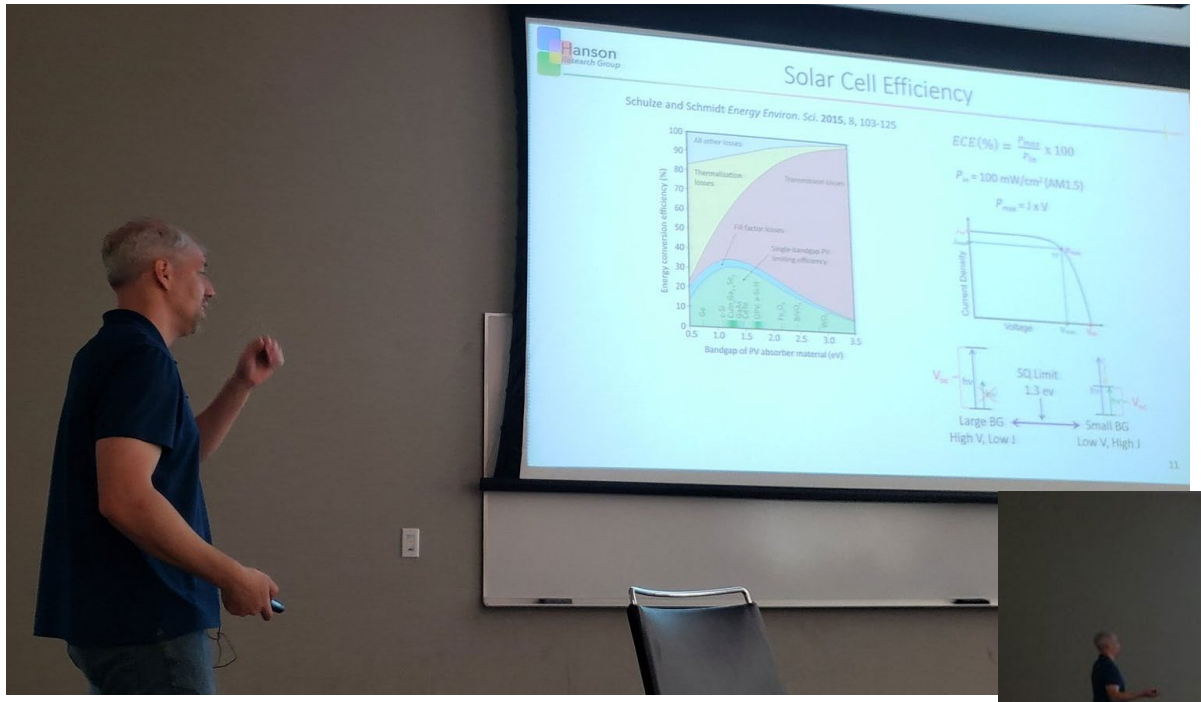
Photochemistry Café

"Understanding and Controlling Excited States at Molecule-Metal Oxide Interfaces"

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

Prof. Kenneth Hanson

June 3, 2025, 9:00-10:00 p.m.
CSL 1005, Tallahassee, Florida



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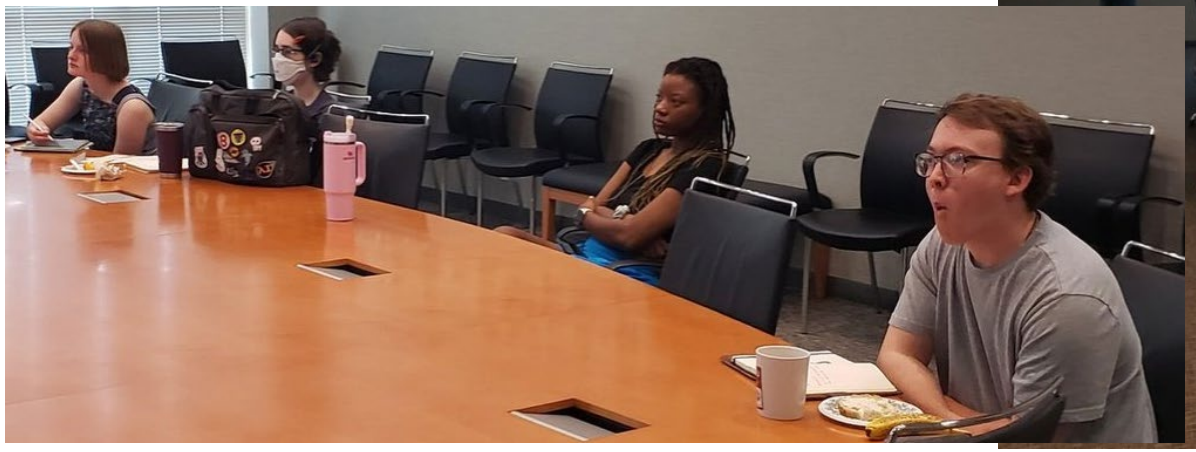
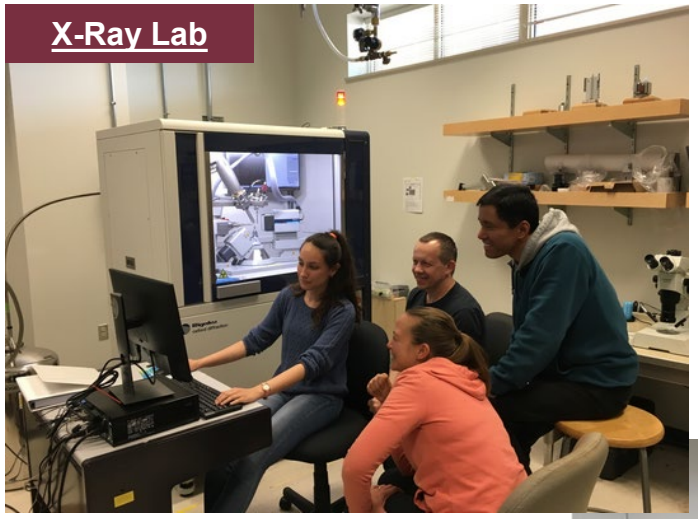


Tour of Departmental Shared Research Facilities

June 3, 2025 – CSL with Prof. Ken Hanson

Mass Spectrometry Laboratory (MASS Lab)

X-Ray Lab



Materials Characterization Laboratory (MAC Lab)

NMR Lab

June 5 – after a thunderstorm, some nice optical phenomena

Spectroscopy Lab

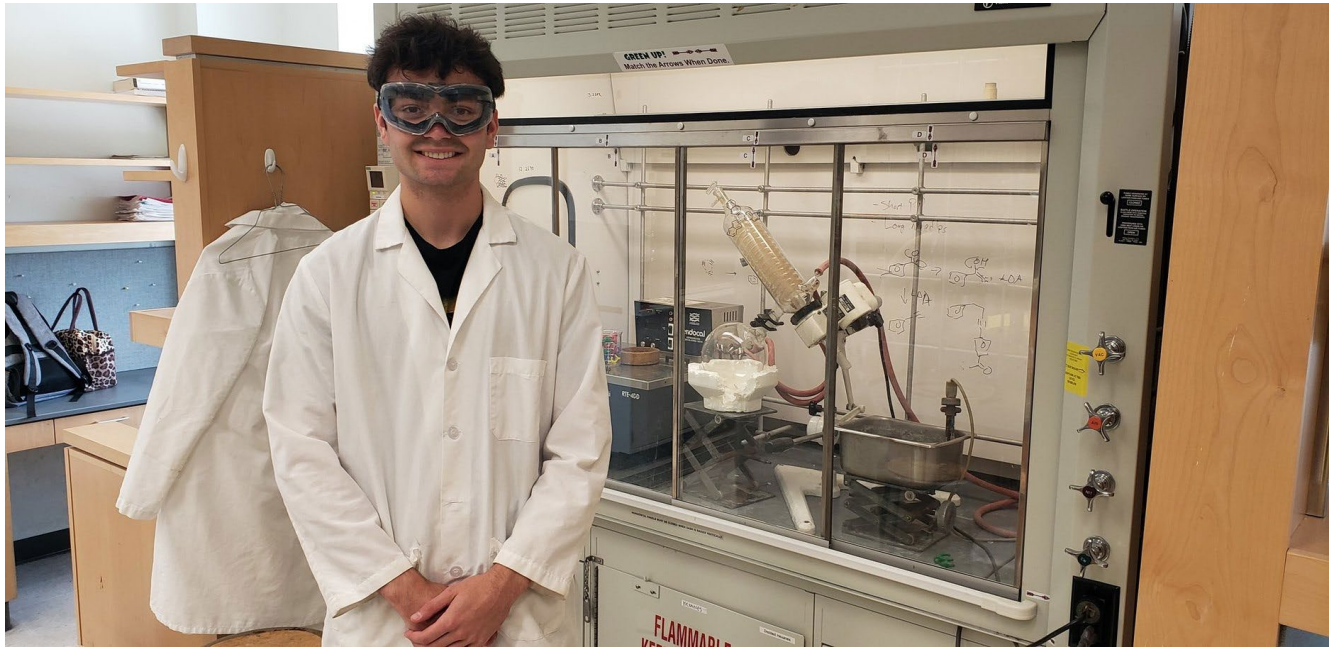
After a Thunderstorm, the View Outside a CSL 5th Floor East Side Window… Nice Optical Splendors

June 5, 2025 – CSL with Dr. Ed Hilinski

Happy Birthday, Max!

June 6, 2025 – CSL 1005, Tallahassee, Florida

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



Localized surface plasmon resonances (LSPRs) are interfacial phenomena that arise when free carriers (e^- or h^+) oscillate at a resonant frequency of light. This results in an extremely strong optical absorption feature whose frequency depends on the concentration of free carriers and their effective mass. Semiconductors offer numerous advantages over traditional metallic systems including tunable carrier density, near to mid-infrared LSPRs, and a larger number of plasmonic systems. Research in the Strouse group focuses on studying the structure-property relationships that govern LSPRs in semiconductor nanocrystals. We utilize a full suite of spectroscopic techniques (steady-state/transient absorption, solid-state NMR, magnetic circular dichroism) to investigate these nanomaterials in order to probe structural and electronic properties such as dopant deactivation, carrier effective mass, and free carrier pinning.

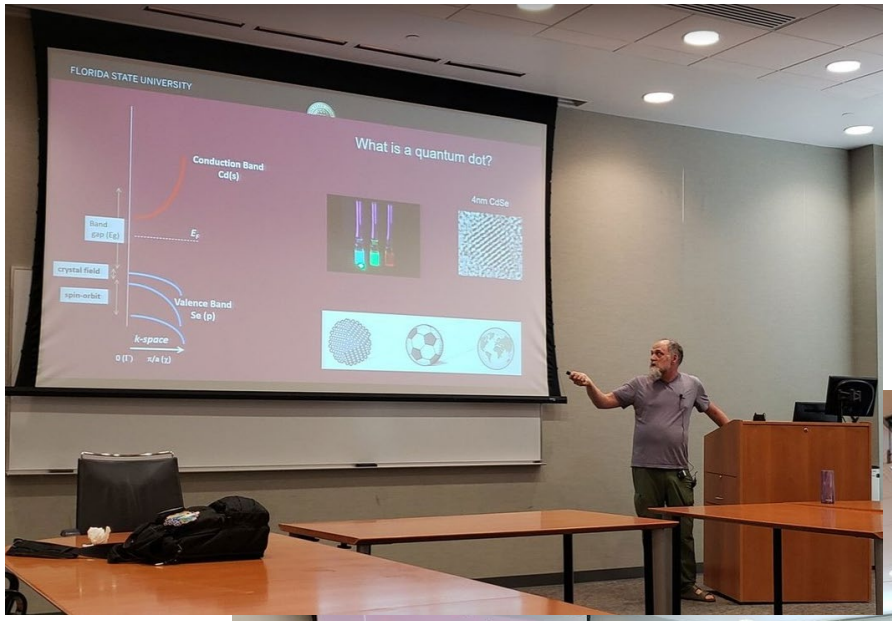
Photochemistry Café

"Plasmonic Semiconductor Nanocrystals"

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

Prof. Geoffrey Strouse

June 6, 2025, 3:30-4:30 p.m.
CSL 1005, Tallahassee, Florida



Photochemistry Café

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Prof. Geoffrey Strouse

June 6, 2025, 3:30-4:30 p.m.
CSL 1005, Tallahassee, Florida

Under the Oaks at Lake Ella

June 7, 2025 – Black Dog Café, Tallahassee, Florida with Profs. Wei Yang and Ed Hilinski

Wakulla Springs Excursion

https://thelodgeatwakullasprings.com/

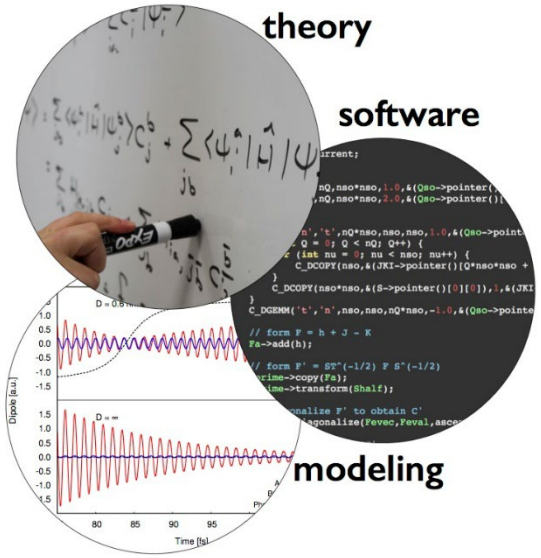
June 7, 2025, Wakulla, Florida
with Ed Hilinski

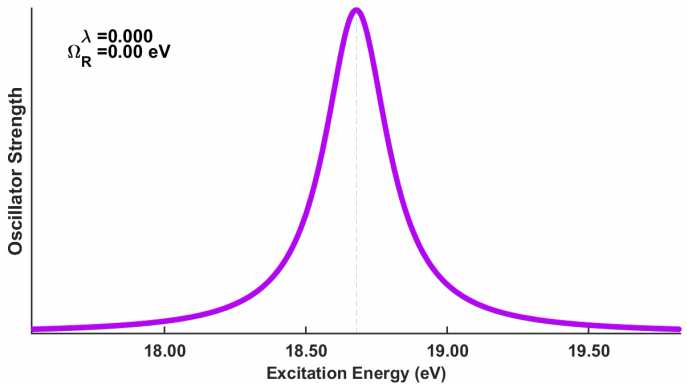
In the X-Ray Lab, Going Over the Analysis of a new Crystal Phase

June 9, 2025, Chemical Sciences Laboratory (CSL), Tallahassee, Florida

Cavity-molecule Interactions

Strong coupling of photonic and molecular degrees of freedom can lead to the formation of hybrid light-matter states known as polaritons that can exhibit significantly different properties relative to the original uncoupled states. For example, as the animation below shows, the optical properties of a molecule can be dramatically altered via sufficiently strong coupling to a cavity. In this case, an absorption feature in formaldehyde (described by a cavity quantum electrodynamics [QED] generalization of equation-of-motion [EOM] coupled-cluster [CC] theory and a minimal basis) splits into a lower and upper polariton state, separated by what is called the Rabi splitting, which, in this case, can exceed 1 eV.





Photochemistry Café

"Modeling Chemistry in an Optical Cavity"

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CSL 1005, Tallahassee, Florida

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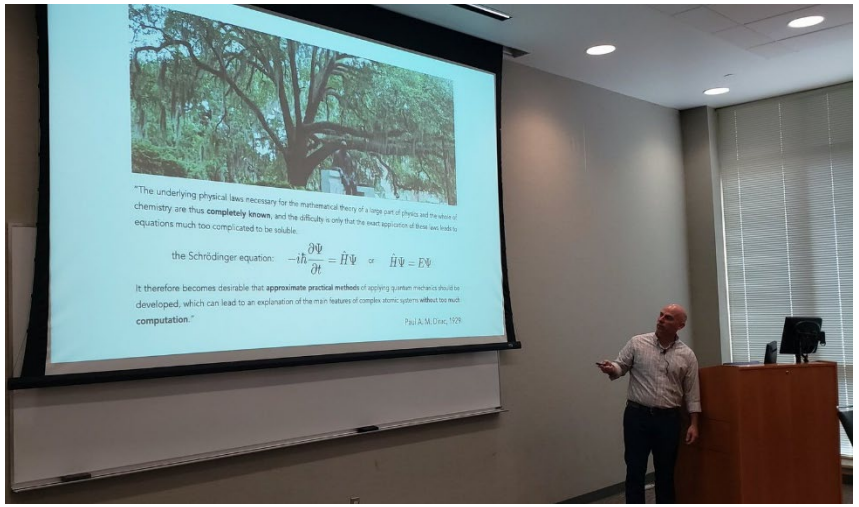
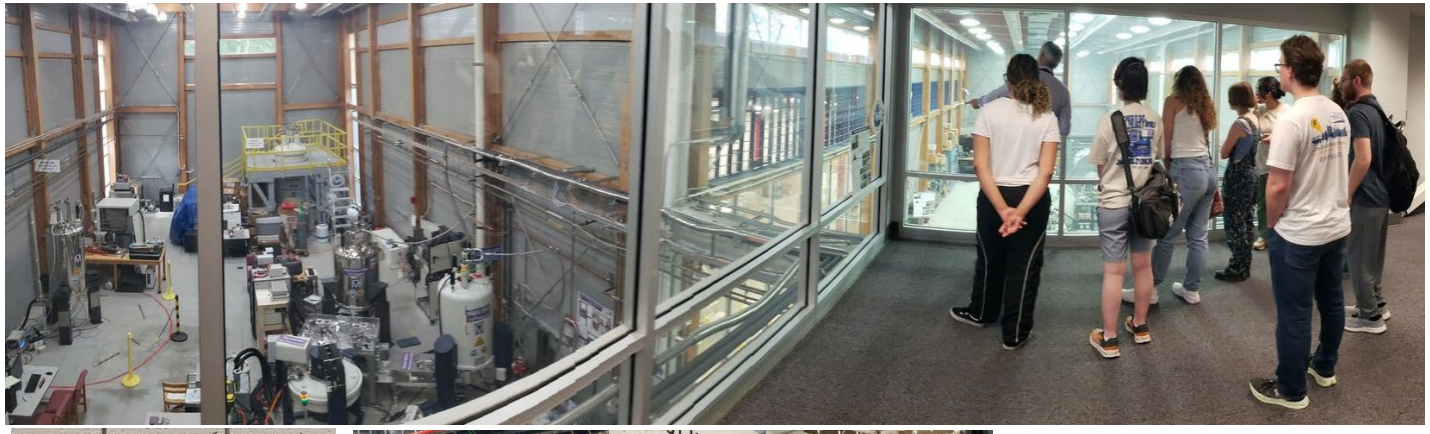


Tour of the National High Magnetic Field Laboratory

nationalmaglab.org/

June 11, 2025, 10:00-11:00 a.m. - Innovation Park, Tallahassee, Florida
Depart from CSL Lobby at 9:30 a.m. with Edan Schultz and Ed Hilinski



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