



Lithium Isotope Separation

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ABOUT ME

- **Major:** Physics & Computer Science
- **Concentration:** Political Science
- **Career Goals/ Interests:**

Make a positive impact through sustainable technology working at the intersection of physics, computer science, and policy.

- **Why did you choose to have a fellowship at LLNL?**

LLNL's fusion work is at the global forefront of nuclear technology and I was deeply eager to collaborate on such an important development for our future. Additionally, I was very attracted to the interdisciplinary nature of projects here.

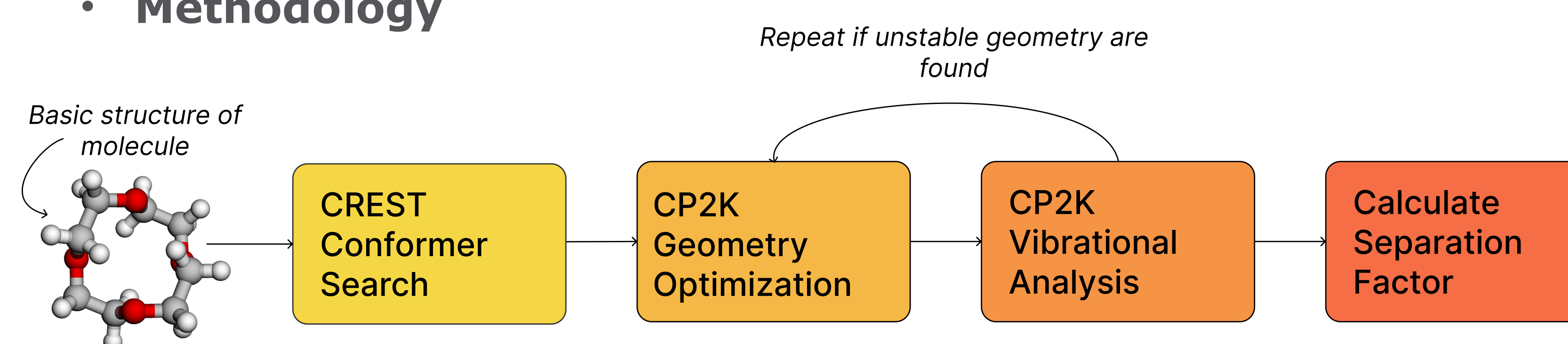


SUMMER RESEARCH

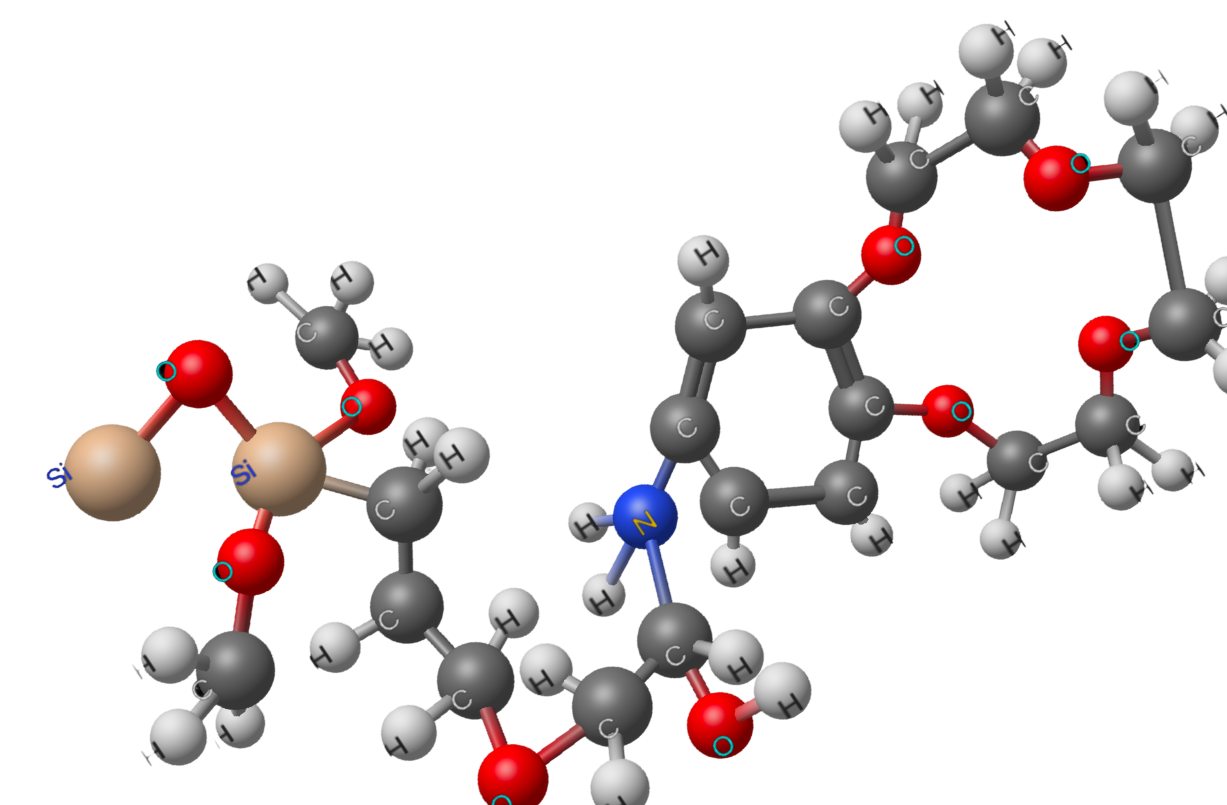
• Abstract:

Separation of lithium isotopes is an essential technology in the development and scaling of nuclear fusion energy, as enriched lithium-6 is needed to breed tritium. I am simulating a clean, cost-efficient method of lithium separation using crown ethers. Using the computational quantum chemistry software CP2K to implement density functional theory, I am exploring how different crown ethers and solvent environments affect the separation factor between lithium-6 and lithium-7. By combining conformer searches, geometry optimization, vibrational analysis, and Python-based automation workflows, I aim to compare computational predictions with experimental trends and identify molecular systems that could improve lithium isotope selectivity.

• Methodology



- **Visualization:** Crown-ether functionalized silica



LLF AWARD

- **Describe how your LLF Funds are being used**

They are being used to fund my housing in Livermore, food and other essentials, as well as trips back home.

- **How has this fellowship impacted you?**

The mentorship at Lawrence Livermore has been truly excellent. In addition to witnessing groundbreaking work in the areas I've been familiar with, I've also been exposed to intriguing fields of research I have never heard of. I am deeply grateful for the opportunity to contribute to a fantastic scientific community, as my experience has given me valuable insights into what I'd like to pursue later in my career.



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