



TRAINEE SPOTLIGHT

MADDIE ESPOSITO



Background

Maddie grew up on Long Island, NY near Brookhaven National Lab. This fateful geographic connection turned into Maddie's gateway into scientific research. Brookhaven offered a research program for students at Maddie's high school, which she found herself involved in despite her initial preference for writing and humanities. However, she found herself enjoying her science curriculum, and she ran with the opportunities the National Lab provided her with, progressing through the program to find micro meteorites in the field (like on the roofs of buildings) and study them using Brookhaven's X-ray synchrotron! She credits the teacher from this research class as an outstanding mentor and influence on her scientific journey. She earned her Bachelor's degree from Princeton, where she pursued research in earth-abundant metal catalysis, focusing on cobalt phosphine catalysts for hydrogenation of pharmaceutical precursors. We're so lucky to have her on board as a MRSEC trainee and member of TLAC!

Research

Maddie's research focuses on developing next-generation metal-organic frameworks (MOFs) by incorporating catalytically active metals directly into the framework. She is driven by the challenge of designing new MOFs and creating strategies to improve their performance in real-world industrial settings.

Her interests span from understanding how catalyzed reactions underpin global chemical processes to pushing forward the field of cobalt phosphine MOFs. Maddie is especially passionate about identifying applications where MOFs can truly excel as superior catalysts or platforms—aiming to bridge fundamental innovation with practical impact.

Fun Facts

Outside the lab, Maddie is all about balance and exploration. In her free time, she loves strolling through downtown La Jolla and visiting the many farmers markets scattered around the area. She also enjoys spending time at Cabrillo National Monument and the San Diego Zoo! When she's looking for a moment of calm, you can find her watching the waves at Windansea Beach or grabbing a good cup of coffee. Maddie also has a soft spot for long walks, good books, and yoga. In fact, she is currently training to become a certified yoga instructor through UCSD!

What's Next?

Maddie is interested in pursuing an academic career. She hopes to continue innovating in catalysis and MOF chemistry while mentoring the next generation of scientists.