

SUMMER SCHOLARS PROJECTS

PROJECT CATEGORY: Next Gen Materials

STARTUP: MFNS Tech

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PROJECT TITLE: From Lab to Pilot: Scale-Up and Optimization of Nanomaterials Production via Vertical Integration

PROJECT DESCRIPTION

MFNS Tech, Inc. is a pioneering force in the realm of nanotechnology, dedicated to creating sustainable solutions for environmental challenges. Our mission is to harness Multifunctional Nanostructures for practical applications in Environmental Remediation. We are seeking a highly motivated and technically skilled intern that can assist us in scale-up optimization of our nanomaterials production process.

JOB EXPECTATIONS:

The intern will be responsible for using the in-house developed flow reactor for nanomaterials synthesis and assist in optimizing multiple parameters (flow rate, reaction time, etc.) for the newly scaled-up reactor. They will also participate in pilot studies, conducting in-house and on site tests, data collection, analysis, and performance evaluation. The intern will work closely with the Research Assistant and other team members to design and implement the experiments.

Principal Responsibilities

- Conducting experiments to optimize flow reactor (scale up).
- Assisting in pilot studies and its data analysis
- Keeping detailed records of protocols, experiments, results, and analysis
- Collaborating with other team members to design and implement experiments.
- Presenting results and providing recommendations for future experiments.

DESIRED EXPERIENCE:

Currently enrolled in an undergraduate or graduate program materials science, chemical engineering, or related field

- Basic laboratory skills (Any wet chemistry experience preferred)
- Strong analytical and problem-solving skills
- Strong written and verbal communications skills

TIME COMMITMENT:

This will be a full-time internship for 8 weeks with flexible dates over the summer.

TRAINING MENTORING

- Initial Meeting:
 - The intern will meet with the project supervisor to discuss the project goals and objectives, as well as the expectations for the internship.
 - The intern will be provided with a project overview, including relevant background information, literature review, and experimental protocols.
 - The intern will be given a tour of the lab facilities and introduced to the lab equipment and procedures.
- Weekly Progress Meetings:
 - The intern will be involved in the weekly update meetings to discuss progress, any challenges encountered, and next steps.
 - The supervisor will provide guidance and feedback on the results and data analysis.
 - The intern will also have the opportunity to ask questions and receive feedback on any challenges they may be facing.
- Data Analysis and Interpretation:
 - The intern will be trained on nanocomposite synthesis, conducting pilot studies and will receive guidance on the interpretation of results.
- Research Presentations:
 - The intern will be required to give presentations on their research progress and findings to the lab group and other relevant stakeholders.
 - The supervisor will provide feedback on the intern's presentation skills and will help the intern to improve their communication and presentation skills.
- Final Report and Presentation:
 - The intern will be required to prepare a final report and give a final presentation on their research project.
 - The supervisor will provide feedback on the report and presentation and will help the intern to prepare for the final submission.
- Evaluation and Feedback:
 - At the end of the internship, the supervisor will provide the intern with an evaluation and feedback on their performance.
 - The intern will also have the opportunity to provide feedback on their mentoring experience and the internship program.

Feedback will be given informally regularly during the internship, as well as with two formalized sessions, one occurring halfway through the internship and a written evaluation occurring at the end of the internship, both containing a performance review of the intern's progress and work. The development of the intern will focus on improving problem solving skills in a professional engineering context, solidifying verbal and written technical communication, and emphasizing collaborative engineering work."