

Sustainable energy is one of the best solutions to fossil fuel scarcity, yet it is usually inconsistently produced and needs better storage sites. One popular energy storage medium is batteries. However, the most commonly used lithium-ion batteries (LIBs) degrade over time and some of their raw materials, such as lithium (Li) and cobalt (Co), are limited and becoming more expensive. In the search for alternatives, fluoride ion batteries (FIBs) may be a promising choice: they can store more energy and have abundant raw materials. The Warren lab at UNC is investigating novel electrode materials for FIBs. However, physical contact between these electrodes and the electrolyte result in reactions that reduce battery performance. This project intends to develop a protective coating—the solid electrolyte interphase (SEI)—on electrodes to prevent electrode-electrolyte reactions, while still allowing the battery to charge and discharge.