

**Proposed Advisor: Dr. Corey Love**

**Lab Location: NRL (Washington DC)**

**Research Description:** We are striving to improve the safety of lithium-ion batteries through basic science and applied diagnostic methods. Our approach involves in-situ experimental techniques to observe passivation layer chemistry and identify the chemical and materials processes contributing to instability in lithium-ion batteries. We use this basic understanding to develop robust electrochemical impedance-based diagnostics to detect chemical degradation within lithium-ion batteries. We are also studying the effect of nanoscale coatings on the performance, safety and durability of a host of oxide and silicon-based electrode materials as well as in-situ optical microscopy to determine the nucleation, formation, and growth of lithium plating and dendrites.

**Contact Information:**

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