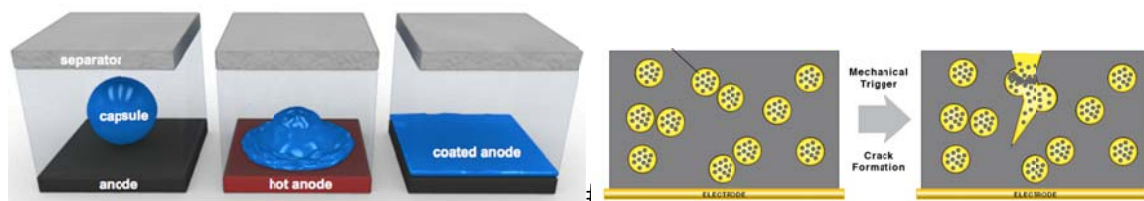


**Project Title:** Advanced Battery Technology

**Advisors:** Prof. Scott R. White (AE) and Prof. Nancy R. Sottos (MatSE)

**Project Description:**

Li-ion batteries are currently used in a variety of consumer product applications including cell phones, portable computers, cordless power tools, etc. Their excellent specific energy density makes them a leading candidate for rechargeable batteries in electric vehicles like the Chevy Volt. However, safety and longevity of Li-ion batteries for electric vehicles is currently a major technological challenge impeding their widespread use. Our research focuses on integrating microencapsulated materials into batteries to achieve increased safety (thermally triggered shutdown) and longer life (self-healing electrodes).



**Figure 1:** Advanced Li-ion battery concepts for autonomic shutdown and self-healing.

**Student background and expected research activities:**

Highly motivated and enthusiastic students are desired who have an aptitude for experimental research and an interest in materials. Prior experience is preferred, but not required. Students will be part of a research team working on battery technology and should possess good communication skills.

**Points of Contact:**

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**Funding:**

Department of Energy (DOE), Engineering Frontiers Research Center

**References:**

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- [2] Baginska, *et al.* Autonomic Shutdown of Lithium-Ion Batteries Using Thermoresponsive Microspheres, *Advanced Energy Materials*, to appear (2011).