Our technology applies revolutionary advances in solid-state-ionics and conventional ceramic fabrication techniques to develop high-energy-density, low-cost, all solid-state batteries.

- Based on high-conductivity, high-voltage, intrinsically-safe (non-flammable) garnet solid state electrolytes (SSE)

- Thin dense SSE layer supported by high surface area porous electrodes results in low impedance cells

- Stable electrochemical voltage window of garnet SSE allows for high voltage (~6 V) cathodes and thus higher energy/power density

- Porous SSE scaffold allows use of high specific capacity metal-Li anode with no SEI formation

- Porous 3-D networked SSE scaffolds also allow electrode materials to fill pore volume with a smaller charge transfer resistance and no electrode cycling fatigue
We are developing high-power density, solid-state, lithium-ion batteries that overcome all of the safety, stability, and performance issues of conventional Li-ion batteries. The dense ceramic electrolyte prevents Li-dendrite shorting and overcomes thermal stability issues of currently used organic liquid electrolytes. The all solid-state structure provides revolutionary dimensional tolerance and mechanical strength, decreasing packaging requirements and system weight. Moreover, our technology will also dramatically reduce manufacturing costs using scalable, ceramic fabrication techniques that do not require dry rooms or vacuum equipment.

**Advantages:**

- “Holy grail” metal anode provides *maximum theoretical energy and power density*
- Dense ceramic SSE prevents dendrite growth
- Li cycles between electrodes by pore filling with no cycle fatigue or dimensional changes
- Wide operating temperature range with no thermal runaway concern
- Mechanically robust and conformal
- Non-flammable and intrinsically safe

*Inclusive of packaging*

<table>
<thead>
<tr>
<th>Battery Pack *Estimated Performance</th>
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<tbody>
<tr>
<td>Cell voltage</td>
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<tr>
<td>Specific capacity</td>
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<tr>
<td>Volumetric capacity</td>
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<tr>
<td>Energy density (mass)</td>
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<td>Energy density (volume)</td>
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3 mA/cm²

Stable Li\text{metal} cycling with no dendrite shorting or performance decay