With the current intercalation materials, repeated use of active ions in the material cause strains to the crystallographic texture, found in most rechargeable batteries. By analyzing the crystallographic structure and finding the flaws, the material behavior can be enhanced. This would fix the structural integrity in order to make the batteries lifespan stronger.

**Lattice Structures**

Simple Cubic is a crystalline structure with lattice points at each corner.

Face Centered Cubic is a crystalline structure with lattice points at each corner with additional ones of each center of the faces of the cube.

Body Centered Cubic is a crystalline structure with lattice points at each corner as well as one at the middle of the cube.

These structures are used in to increase surface area and distribute material effectively.

**Intercalation Material**

An intercalation material located in the cathode is LiV$_2$O$_5$. Using Mathematica I was able to visualize after getting the coordinates of each atom. This was done by multiplying the original coordinates by the relative coordinates. The X, Y and Z coordinates all had to undergo this process. Later in Mathematica they were graphed in order to produce the material shown in Figure 5.

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**References**