CLAIMS

1. An electrolyte material comprising:

a solid ionically conductive polymer having a semi-crystalline or crystalline structure,

wherein the polymer is formed from a base polymer, an ionic compound and an electron acceptor, the base polymer is a polyether ether ketone, polyphenylene sulfide, a liquid crystal polymer, or a semi-crystalline polymer with a crystallinity index greater than 30%, the ionic compound is an oxide, hydroxide or a salt, and the electron acceptor is 2,3-dichloro-5,6-dicyano-1,4-benzoquinone, tetracyano-ethylene or chloranil, and

wherein the polymer has an ionic conductivity greater than 1×10^{-4} S/cm at room temperature.

2. The material of claim 1, wherein the base polymer has a melting temperature which is greater than 250°C.

3. The material of claim 1,

wherein the material comprises a cationic diffusing ion; and

wherein the cationic diffusing ion comprises lithium.

4. The material of claim 1,

wherein the material comprises a diffusion cation; and

wherein the diffusing cation is monovalent.

5. The material of claim 1,

wherein the material comprises a diffusing anion; and

wherein the diffusing anion is a hydroxyl ion.

6. The material of claim 1,

wherein the material comprises a diffusing anion; and

wherein diffusing anion is monovalent.

7. The material of claim 1,

wherein the material comprises a diffusing anion and a diffusing cation; and

wherein each of the diffusing anion and the diffusing cation are monovalent.

8. The material of claim 1, wherein the ionic crystalline or semi- crystalline polymer comprises a plurality of monomer residues; and

wherein a molecular weight of each monomer residue of the plurality of monomer residues is greater than 100 grams/mole.

9. The material of claim 1, wherein the ionic conductivity is greater than 1×10^{-3} S/cm at room temperature.

10. The material of claim 1, wherein the material exhibits UL 94 V-0 flame retardancy.

11. The material of claim 1, wherein the material is in the shape of a film.

12. The material of claim 1, wherein the material is formed by a method including a step of doping with the electron acceptor.