

CLAIMS

1. A method of producing lithium hexafluorophosphate (LiPF_6) in solid form, the method including reacting lithium fluoride (LiF) in solid form with gaseous phosphorous pentafluoride (PF_5), wherein the reaction is performed in a liquid perhalogenated organic compound that is inert to the PF_5 and is a solvent for the PF_5 , thereby producing LiPF_6 in solid form.
2. The method according to claim 1, wherein reacting the LiF with gaseous PF_5 includes
dispersing the LiF in solid form in the liquid medium; and
dissolving gaseous PF_5 in the liquid medium containing the LiF in solid form.
3. The method according to any of claims 1 to 3, wherein the perhalogenated organic compound is a perfluorocarbon.
4. The method according to claim 3, wherein the perfluorocarbon is selected from cyclic and non-cyclic perfluoroalkanes, and cyclic and non-cyclic perfluoroalkenes, and mixtures of any two or more thereof, severally or jointly.
5. The method according to any of claims 1 to 4, wherein the perfluorocarbon is selected from perfluorodecalin, perfluoroheptane, hexafluorobenzene, tetrafluoroethylene, and mixtures of any two or more thereof.
6. Solid LiPF_6 produced according to the method of any of claims 1 to 5

7. A method of producing an electrolyte, the method including producing LiPF_6 in solid form according to the method of claims 1 to 5; and dissolving the LiPF_6 in solid form in a solvent for LiPF_6 .
8. The method according to claim 5, wherein the solvent for LiPF_6 is selected from ethylene carbonate, propylene carbonate, dimethyl carbonate, dimethyl ether, and mixtures thereof.
9. An electrolyte produced according to the method of claim 7 or claim 8.
10. A method of manufacturing an electric battery, the method including producing an electrolyte according to the method of claim 7 or claim 8; and including the electrolyte in an electric battery.