CLAIMS:

1. A solid alcohol solvate of a tetra(C_1-C_6 alkyl)ammonium fluoride and a C_x alcohol, wherein *x* is 3, 5, 6, 7, 8, 9, or 10.

2. The solid alcohol solvate of claim 1, wherein the tetra(C_1-C_6 alkyl)ammonium fluoride is a tetrabutylammonium fluoride.

3. The solid alcohol solvate of claim 1 or claim 2, wherein the solid alcohol solvate is in a crystalline form.

4. A hydrate of an alcohol solvate of any one of claims 1-3.

5. A method comprising

combining an ammonium fluoride or a hydrate thereof with a solvent comprising an alcohol to form a mixture; and

isolating a solid alcohol solvate from the mixture.

6. The method of claim 5, wherein isolating the solid alcohol solvate comprises distilling the mixture to yield the solid alcohol solvate.

7. The method of claim 5 or claim 6, wherein the ammonium fluoride or hydrate thereof is tetra(C_1-C_6 alkyl)ammonium fluoride or a hydrate of tetra(C_1-C_6 alkyl)ammonium fluoride.

8. The method of any one of claims 5-7, wherein the mixture further comprises a C_5-C_{10} alkane, a C_6-C_{10} aromatic hydrocarbon, or a combination thereof.

9. The method of any one of claims 5-8, wherein the method comprises

combining the ammonium fluoride or hydrate thereof with the solvent comprising the alcohol to form the mixture;

heating the mixture to a temperature of about 50 °C to about 100 °C for about 1 hour to about 10 hours to provide a heated mixture; and

isolating the solid alcohol solvate from the heated mixture.

10. The method of any one of claims 5-9, wherein the mixture comprises 1 molar equivalent of the ammonium fluoride or hydrate thereof and about 5 to about 50 molar equivalents of the alcohol.

11. The method of any one of claims 8-10, wherein the mixture comprises 1 molar equivalent of the ammonium fluoride or hydrate thereof and about 1 to about 10 molar equivalents of the C_5-C_{10} alkane, the C_6-C_{10} aromatic hydrocarbon, or the combination thereof.

12. The method of any one of claims 5-11, wherein isolating the solid alcohol solvate from the mixture comprises distilling the mixture to collect a distillate in a Dean-Stark apparatus or comprises an absolute pressure of about 50 mmHg to about 500 mmHg.

13. The method of any one of claims 5-12, wherein the alcohol comprises *tert*-butanol or *tert*-amyl alcohol.

14. The method of any one of claims 5-13, wherein the solid alcohol solvate is tetra-*n*-butylammonium tetra(*tert*-amyl alcohol) fluoride, tetra-*n*-butylammonium tetra(*tert*-butyl alcohol) fluoride, or tetramethylammonium *tert*-amyl alcohol fluoride.

15. The method of any one of claims 5-14, wherein isolating the solid alcohol solvate comprises isolating the solid alcohol solvate substantially free of water or isolating an anhydrous solid alcohol solvate of the ammonium fluoride and the alcohol.