We claim:

1. A solvent-free system for delivery of a volatile compound, comprising

a molecular complex of the volatile compound and an inclusion complex;

a treatment compartment; and

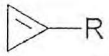
means of an energy source, wherein the solvent-free system is configured to release the volatile compound from the molecular complex without water.

2. The system of claim 1, further comprising an elastomer.

3. The system of claim 2, wherein the elastomer comprises ethylene vinyl acetate.

4. The system of claim 1, wherein the volatile compound comprises a cyclopropene.

5. The system of claim 4, wherein the cyclopropene is of the formula:

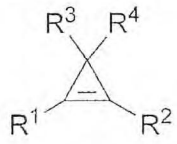


wherein R is a substituted or unsubstituted alkyl, alkenyl, alkynyl, cycloalkyl, cycloalkylalkyl, phenyl, or naphthyl group; wherein the substituents are independently halogen, alkoxy, or substituted or unsubstituted phenoxy.

6. The system of claim 5, wherein R is C_1-C_8 alkyl.

7. The system of claim 5, wherein R is methyl.

8. The system of claim 4, wherein the cyclopropene is of the formula:



wherein R^1 is a substituted or unsubstituted C_1-C_4 alkyl, C_1-C_4 alkenyl, C_1-C_4 alkynyl, C_1-C_4 cycloalkyl, cycloalkylalkyl, phenyl, or naphthyl group; and R^2, R^3, and R^4 are hydrogen.

9. The system of claim 4, wherein the cyclopropene is 1-methylcyclopropene (1-MCP).

10. The system of any one of claims 1 to 9, wherein the inclusion complex comprises an agent selected from the group consisting of substituted cyclodextrins, unsubstituted cyclodextrins, crown ethers, zeolites, and combinations thereof.

11. The system of any one of claims 1 to 9, wherein the inclusion complex comprises a cyclodextrin.

12. The system of claim 11, wherein the cyclodextrin is selected from the group consisting of alpha-cyclodextrin, beta-cyclodextrin, gamma-cyclodextrin, and combinations thereof.

13. The system of any one of claims 1 to 12, wherein the treatment compartment is selected from the group consisting of a thermal desorption tube, a glass bottle, a Tedlar bag, an aluminum cup, and combinations thereof.

14. The system of any one of claims 1 to 13, wherein the energy source comprises at least one of electrical energy, magnetic energy, electromagnetic energy, ultrasonic energy, acoustic energy, and thermal energy.

15. The system of any one of claims 1 to 13, wherein the energy source comprises at least one energy characteristic of waveform, frequency, amplitude, or duration.

16. The system of any one of claims 1 to 13, wherein the means of the energy source comprises heating to a temperature between 100 °C and 300 °C.

17. The system of any one of claims 1 to 13, wherein the means of the energy source comprises heating to a temperature between 150 °C and 250 °C.

18. The system of any one of claims 1 to 13, wherein the means of the energy source is performed in an enclosed environment.

19. The system of any one of claims 1 to 13, wherein the means of the energy source is performed in an environment at a temperature between -30 °C and 10 °C.

20. The system of any one of claims 1 to 13, wherein the means of the energy source is performed in a cold storage room or cold storage facility.

21. A method for delivery of a volatile compound, comprising:

providing a molecular complex of the volatile compound and an inclusion complex;

placing the molecular complex into a treatment compartment; and

applying means of an energy source to the treatment compartment, thereby releasing the volatile compound from the molecular complex, wherein the treatment compartment is configured to release the volatile compound from the molecular complex without water.

22. The method of claim 21, wherein loss of the volatile compound is less than 20%.

23. The method of claim 21, wherein the system of any one of claims 1 to 20 is used.

24. A method of delaying ripening for a plant or plant part, comprising treating the plant or plant part using the system of any one of claims 1 to 20.

25. A method of delaying ripening for a plant or plant part, comprising treating the plant or plant part using the method of any one of claims 21 to 23.