Claims

1. An allylic oxidation process comprising:
forming a mixture containing α-Guaiene and an iron (III)-X porphyrin complex catalyst wherein X is selected from the group consisting of Cl, Br, I, mesylates, triflates, and carboxylates, in a sustainable solvent,
introducing molecular oxygen into the mixture, and
effecting allylic oxidation to produce an α,ß-unsaturated ketone, Rotundone.

2. The process according to claim 1, wherein the mixture additionally contains a base coordination compound.

3. The process according to claim 1, including exposing the mixture to electromagnetic radiation.

4. The process according to claim 1, wherein the sustainable solvent is selected from the group consisting of water, acetone, ethanol, 2-propanol, ethyl acetate, isopropyl acetate, methanol, methyl ethyl ketone, 1-butanol, t-butanol and mixtures thereof.

5. The process according to claim 1, wherein the sustainable solvent is selected from the group consisting of cyclohexane, heptane, toluene, methylcyclohexane, methyl t-butyl ether, isooctane, acetonitrile, xylenes, dimethyl sulfoxide, acetic acid, ethylene glycol and mixtures thereof.

6. The process according to claim 1, wherein the catalyst is an iron (III) porphyrin complex catalyst, having a chloride counter-ion.

7. The process according to claim 1, wherein the porphyrin complex is a tetraphenylporphyrin complex.

8. The process according to claim 1, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride.

9. The process according to claim 2, including exposing the mixture to electromagnetic radiation.

10. The process according to claim 4, wherein the sustainable solvent is selected from the group consisting of cyclohexane, heptane, toluene, methylcyclohexane, methyl t-butyl ether, isooctane, acetonitrile, xylenes, dimethyl sulfoxide, acetic acid, ethylene glycol and mixtures thereof.

11. The process according to claim 2, wherein the catalyst is an iron (III) porphyrin complex catalyst, having a chloride counter-ion.

12. The process according to claim 3, wherein the catalyst is an iron (III) porphyrin complex catalyst, having a chloride counter-ion.

13. The process according to claim 4, wherein the catalyst is an iron (III) porphyrin complex catalyst, having a chloride counter-ion.

14. The process according to claim 5, wherein the catalyst is an iron (III) porphyrin complex catalyst, having a chloride counter-ion.

15. The process according to claim 11, wherein the porphyrin complex is a tetraphenylporphyrin complex.

16. The process according to claim 12, wherein the porphyrin complex is a tetraphenylporphyrin complex.

17. The process according to claim 13, wherein the porphyrin complex is a tetraphenylporphyrin complex.

18. The process according to claim 14, wherein the porphyrin complex is a tetraphenylporphyrin complex.

19. The process according to claim 2, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride.

20. The process according to claim 3, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride.

21. The process according to claim 4, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride.

22. The process according to claim 5, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride.

23. The process according to claim 6, wherein the catalyst is selected from chloro(tetraphenylporphyrinato)iron(III) and hemin chloride