CLAIMS

What is claimed is:

1. A process comprising contacting 1,2-dichloro-1,2-difluoroethylene (CFO-1112) and hydrogen in a heated reaction zone, in the presence of a catalyst, to produce a mixture comprising at least E-1,2-difluoroethylene and Z-1,2-difluoroethylene.

2. The process of claim 1, wherein the CFO-1112 contacts hydrogen in the vapor phase.

3. The process of claim 1 or claim 2, wherein the catalyst comprises a metal selected from the group consisting of copper, nickel, palladium, and combinations thereof, on a support which is selected from the group consisting of carbon, Al_2O_3 and SiC.

4. The process of claim 3, wherein the catalyst comprises a copper-palladium (Cu-Pd)/carbon catalyst.

5. The process of claim 4, wherein the catalyst is selected from one of (i) about 0.1 to about 1.0 weight percent palladium and about 0.1 to about 20 weight percent copper and, (ii) about 0.1 to about 0.75 weight percent palladium and about 1 to about 5.0 weight percent copper.

6. The process of any one of claims 1 to 5, the process further comprising activating the catalyst prior to contacting the CFO-1112 and hydrogen.

7. The process of any one of claims 1 to 6, wherein the CFO-1112 contacts hydrogen in a reaction zone at a temperature selected from one of: (i) from about 175°C to about 300°C, or (ii) from about 200°C to about 275°C, or (iii) from about 225°C to about 275°C.

8. The process of any one of claims 1 to 7, wherein the CFO-1112 contacts hydrogen in a reaction zone at a temperature selected from one of: (i) at least about 180°C, at least about 190°C, at least about 200°C, at least about 210°C, at least about 230°C, or at least about 240°C, and (ii) less than about 300°C or less than about 275°C.

9. The process of any one of claims 1 to 7, wherein the CFO-1112 contacts hydrogen in a reaction zone at a temperature selected from between one of (i) 225°C, 230°C, 235°C, 240°C, 245°, 250°C, 255°C, 260°C, 265°C or 270°C, and (ii) about 275°C.

10. The process any one of claims 1 to 90, wherein the CFO-1112 contacts hydrogen in a reaction zone at one of subatmospheric, atmospheric or super atmospheric pressure.

11. The process of any one of claims 1 to 10, wherein the CFO-1112 contacts hydrogen in a reaction zone at a pressure selected from one of (i) between about 10 psig and 250 psig, (ii) between about 20 psig and 200 psig, or (iii) between about 30 psig and 150 psig.

12. The process of any one of claims 1 to 11, wherein the reaction zone is heated to a temperature selected from one of from about 200°C to about 275°C, or from about 225°C to about 275°C, and a pressure selected from one of from about 10 psig to 250 psig, from about 20 psig to 200 psig, or from about 30 psig to 150 psig.

13. The process of any one of claims 1 to 12, further comprising recovering at least one of the E-HFO-1132 and the Z-HFO-1132.

14. The process of claim 13, further comprising blending the recovered E-HFO-1132 and/or the Z-HFO-1132 with at least one of a difluoropropene, a trifluoropropene, a tetrafluoropropene, and a pentafluoropropene, and optionally with at least one of HCFO-1131 and HFO-1123.

15. A composition comprising at least one of E-HFO-1132 and Z-HFO-1132, and further comprising one or more additional compounds selected from the group consisting of methane, ethane, HFC-41, HCFC-132, HCC-150, HCFC-151, HFC-152, HFC-161, CFO-1112, E-HCFO-1122a, Z-HCFO-1122a, HCFO-1131 and HFO-1141, preferably two or more additional compounds, or preferably three or more additional compounds.