CLAIMS

1. A process for activating a hydroalkylation catalyst, the process comprising:

(a) providing a hydroalkylation catalyst comprising a molecular sieve and a compound of a hydrogenation metal; and

(b) activating the hydroalkylation catalyst in the presence of hydrogen to provide for a reduction of the compound of the hydrogenation metal;

wherein the majority of the activation step (b) occurs at temperatures below ~~about~~ 250°C based on activation time.

2. The process of claim 1, wherein the majority of the activation step (b) occurs at temperatures below ~~about~~ 200°C based on activation time.

3. The process of claim 1 or claim 2, wherein substantially the entire activation step (b) based on activation time occurs at temperatures below ~~about~~ 250°C.

4. The process of any of the preceding claims, wherein the majority of the activation step (b) occurs at temperatures greater than 25°C based on activation time.

5. The process of any one of the preceding claims, further comprising:

(c) reducing the water content of the hydroalkylation catalyst prior to activating step (b).

6. The process of any one of the preceding claims, wherein the activating step (b) is conducted in situ.

7. The process of any one of the preceding claims, wherein the activating step (b) is conducted for at least 1 hours.

8. The process of any one of the preceding claims, wherein the activating step (b) is conducted for at least 5 hours.

9. The process of any one of the preceding claims, wherein the majority of the activation step (b) occurs at temperatures between ~~about~~ 0°C and ~~about~~ 250°C based on activation time.

10. The process of any one of the preceding claims, wherein the majority of the activation step (b) occurs at temperatures between ~~about~~ 0°C and ~~about~~ 200°C based on activation time.

11. The process of any one of the preceding claims, wherein the majority of the activation step (b) occurs at temperatures between ~~about~~ 0°C and ~~about~~ 150°C based on activation time.

12. The process of any one of the preceding claims, wherein the activating step (b) is conducted at a pressure of ~~about~~ 0 to ~~about~~ 4000 kPa, gauge.

13. The process of any one of the preceding claims, wherein the activating step (b) is conducted in the presence of a liquid phase diluent.

14. The process of claim 13, wherein the diluent comprises an aromatic compound.

15. The process of claim 13 or claim 14, wherein the diluent comprises benzene.

16. The process of any one of the preceding claims, wherein the hydrogenation metal is selected from palladium, ruthenium, nickel, zinc, tin, cobalt and mixtures thereof.

17. The process of any one of the preceding claims, wherein the hydrogenation metal comprises palladium.

18. The process of any one of the preceding claims, wherein the molecular sieve comprises an MCM-22 family molecular sieve.

19. A process for producing a cycloalkylaromatic compound, the process comprising:

(a) providing a hydroalkylation catalyst comprising a molecular sieve and a compound of a hydrogenation metal;

(b) reducing the moisture of the hydroalkylation catalyst;

(c) activating the hydroalkylation catalyst in the presence of hydrogen to provide for a reduction of the compound of the hydrogenation metal;

wherein the majority of the activation step (c) occurs at temperatures below ~~about~~ 250°C; and

(d) contacting an aromatic compound and hydrogen with the activated catalyst in a hydroalkylation reaction zone under hydroalkylation conditions to produce a product comprising a cycloalkylaromatic compound.

20. The process of claim 19, wherein the activating step (c) is conducted in situ.

21. The process of claim 19 or claim 20, wherein the aromatic compound is benzene and the cycloalkylaromatic compound is cyclohexylbenzene.

22. A process for activating a hydroalkylation catalyst, the process comprising:

(a) providing a hydroalkylation catalyst comprising a molecular sieve and a compound of a hydrogenation metal;

(b) reducing the moisture of the hydroalkylation catalyst; and

(c) activating the hydroalkylation catalyst in the presence of hydrogen and in the presence of a liquid phase diluent to provide for a reduction of the compound of the hydrogenation metal wherein the hydrogen at least partially dissolves in the liquid phase diluent;

wherein the majority of the activation step (c) occurs at temperatures of below ~~about~~ 250°C.