CLAIMS

1. A process comprising reacting an olefin and hydrogen peroxide in the presence of a titanium-MWW zeolite, wherein the titanium-MWW zeolite is produced by:

(a) heating a gel formed from a titanium compound, a silicon source, a boron source, an MWW-templating agent, and water at a temperature in the range of 35°C to 75°C for a period of 8 to 30 hours to form a pre-crystallized gel;

(b) heating the pre-crystallized gel to a temperature in the range of 160°C to 190°C for a period of 5 or more days to form the titanium-MWW zeolite; and

(c) contacting the titanium-MWW zeolite with an acid.

2. The process of claim 1 wherein the titanium compound is selected from the group consisting of titanium halides, titanium alkoxides, and mixtures thereof; the silicon source is selected from the group consisting of colloidal silica, fumed silica, silicon alkoxides, and mixtures thereof; the boron source is selected from the group consisting of boric acid, boron halides, boron hydrides, borate esters, metal borates, and mixtures thereof; and the MWW-templating agent is piperidine or hexamethyleneimine.

3. The process of claim 1 wherein the acid is selected from the group consisting of nitric acid and sulfuric acid.

4. The process of claim 1 wherein the pre-crystallized gel is heated at a temperature in the range of 120°C to 155°C for a period of 8 to 30 hours prior to heating at a temperature in the range of 160°C to 190°C.

5. The process of claim 1 wherein reaction of olefin and hydrogen peroxide is performed in a solvent selected from the group consisting of methanol, ethanol, isopropanol, tert-butanol, water, and mixtures thereof.

6. The process of claim 1 wherein the hydrogen peroxide is formed by the in situ reaction of hydrogen and oxygen in the presence of a noble metal catalyst.

CLAIMS

1. A process comprising reacting an olefin and hydrogen peroxide in the presence of a crystalline titanium-MWW zeolite, wherein the crystalline titanium-MWW zeolite is produced by:

(a) heating a gel formed from a titanium compound, a silicon source, a boron source, an MWW-templating agent, and water at a temperature in the range of 35°C to 75°C for a period of 8 to 30 hours to form a pre-crystallized gel;

(b) heating the pre-crystallized gel to a temperature in the range of 160°C to 190°C for a period of 5 to 8 days to form the crystalline titanium-MWW zeolite; and

(c) contacting the crystalline titanium-MWW zeolite with an acid.

2. The process of claim **1** wherein the titanium compound is selected from the group consisting of titanium halides, titanium alkoxides, and mixtures thereof; the silicon source is selected from the group consisting of colloidal silica, fumed silica, silicon alkoxides, and mixtures thereof; the boron source is selected from the group consisting of boric acid, boron halides, boron hydrides, borate esters, metal borates, and mixtures thereof; and the MWW-templating agent is piperidine or hexamethyleneimine.

3. The process of claim **1** wherein the acid is selected from the group consisting of nitric acid and sulfuric acid.

4. The process of claim **1** wherein the pre-crystallized gel is heated at a temperature in the range of 120°C to 155°C for a period of 8 to 30 hours prior to heating at a temperature in the range of 160°C to 190°C.

5. The process of claim **1** wherein reaction of olefin and hydrogen peroxide is performed in a solvent selected from the group consisting of methanol, ethanol, isopropanol, tert-butanol, water, and mixtures thereof.

6. The process of claim **1** wherein the hydrogen peroxide is formed by the in situ reaction of hydrogen and oxygen in the presence of a noble metal catalyst.