CLAIMS

What is claimed is:

1. A method for the production of an oxidized reaction product, comprising the step of catalytically reacting an amount of a polymer containing material and an oxidation catalyst in a non-aqueous and solvent-free environment for a period of time sufficient to produce the oxidized reaction product

wherein the oxidation catalyst is at least one of a solid metal oxide, a layered porphyrin-like material, and combinations thereof;

wherein the solid metal oxide comprises at least one of manganese oxides, cerium oxides, copper oxides, silver oxides, and combinations thereof.

2. The method of claim 1, wherein the oxidation catalyst comprises a solid metal oxide comprising at least one of manganese oxides, cerium oxides, and combinations thereof.

3. The method of claim 1 wherein the oxidation catalyst comprises K-Birnessite.

4. The method of claim 1, wherein the oxidation catalyst comprises a layered porphyrin-like material.

5. The method of claim 4, wherein the oxidation catalyst comprises hexagonal carbon nitride.