CLAIMS

1. A process for hydroxylating a phenolic substrate, comprising: reacting the phenolic substrate and hydrogen peroxide in the presence of a catalyst selected from the group consisting of a strong acid, a ketone, and mixtures thereof, in a reaction mixture; and simultaneously removing water from the reaction mixture.
2. The process of claim 1, wherein water is removed from the reaction mixture by distillation.
3. The process of claim 2, wherein the distillation is performed with a distillation column.
4. The process of claim 3, wherein the distillation column has from 2 to 30 theoretical plates.
5. The process of claim 2, wherein the distillation is performed under sub-atmospheric pressure.
6. The process of claim 1, wherein the reaction mixture has a water content of less than 1.0 wt.%.
7. The process of claim 1, wherein the reaction mixture has a water content of less than 0.50 wt.%.
8. The process of claim 1, wherein the strong acid has a pKa in water of less than -0.1.
9. The process of claim 1, wherein the strong acid has a pKa in water of less than -5.0.
10. The process of claim 1, wherein the catalyst is a ketone.
11. The process of claim 10, performed in the presence of a sulfur containing promoter.
12. The process of claim 1, performed at a temperature of from 30 to 180°C.

13. The process of claim 1, wherein the phenolic substrate is phenol.
14. The process of claim 1, performed in the presence of a complexing agent.
15. The process of claim 14, wherein the complexing agent is pyrophosphoric acid.