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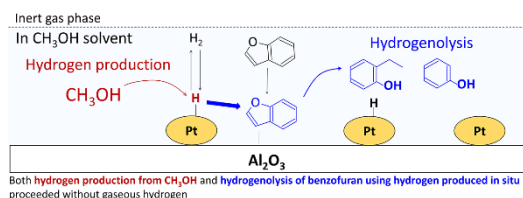
Production of monocyclic phenols by the liquid-phase hydrogenolysis of benzofuran and dibenzyl ether using in situ hydrogen production from methanol

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Graphical Abstract



Highlights

- Hydrogenolysis of benzofuran in methanol without gaseous hydrogen was conducted
- Furan moiety of benzofuran was selectively reacted with hydrogen produced in situ
- Pt/ γ - Al_2O_3 exhibited a higher catalytic performance than Pt/ ZrO_2 and Pt/ TiO_2
- Hydrogen produced in situ was more effective in the reaction than hydrogen gas
- Dibenzyl ether was hydrogenolyzed under the same reaction conditions as benzofuran

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Abstract

We herein report our study into the hydrogenolysis of benzofuran, a model compound for the poorly decomposable compounds derived from lignin, over Pt supported catalysts in methanol in the absence of gaseous hydrogen. In this in situ hydrogenolysis reaction system, it was elucidated that both hydrogen production from methanol and selective hydrogenolysis of the furan moiety proceeded simultaneously to yield monophenolic compounds and gaseous hydrogen. This in situ hydrogenolysis reaction was investigated at temperatures between 180 and 220 °C and with reaction times ranging from 1 to 48 h. We found that the hydrogenolysis reaction was accelerated

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