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The synergistic effects of Ru and WO_x for aqueous-phase hydrogenation of glucose to lower diols

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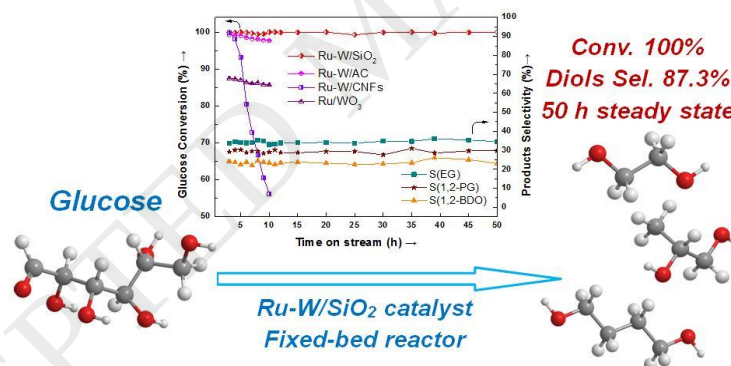
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Graphical abstract

A highly efficient and stable catalytic hydrogenolysis of glucose to lower diols has been developed in a continuous-flow fixed-bed reactor over Ru-W based bi-functional catalyst.



Highlights

- Selective conversion of glucose to lower diols over bi-functional Ru-W supported catalysts
- was conducted in a continuous-flow fixed-bed reactor.
- The abundant W⁴⁺ species of Ru-W/SiO₂ catalyst exhibited 100% conversion of glucose
- with up to 87.3 % total lower diols selectivity.
- Ru/WO₃ catalyst contributes to forming W⁵⁺ species, realizing 55.9% EG selectivity.

Abstract

Aqueous-phase hydrogenation of glucose to lower diols (ethylene glycol (EG), 1, 2-propylene glycol (PG), and butanediol (BDO)) over bi-functional Ru-W supported catalysts was investigated in a continuous-flow fixed-

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