



FURFURYL ALCOHOL AS ONE OF THE PRODUCTS OF LIGNOCELLULOSIC BIOMASS HYDROTREATMENT



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CATALYTIC HYDROPROCESSING IN OIL REFINING

The increasing interest in biomass as a source of chemicals and energy has recently arisen due to the limited fossil fuel resources and the demand for new clean chemical processes. The research on the development of alternative liquid transport fuels has considerably increased in recent years influenced by the implementation of legislation and directives on alternative energy. To achieve these aims in an ethical, environmental and economical manner the use of lignocellulosic biomass or agri-waste for the production of second-generation biofuels is proposed. Chemicals derived from biomass have recently attracted considerable interest. Furfuryl alcohol is widely used in the chemical industry, mainly for the production of special resins, polymers, and coatings on their basis, which is resistant to acids, alkalis, and various solvents.

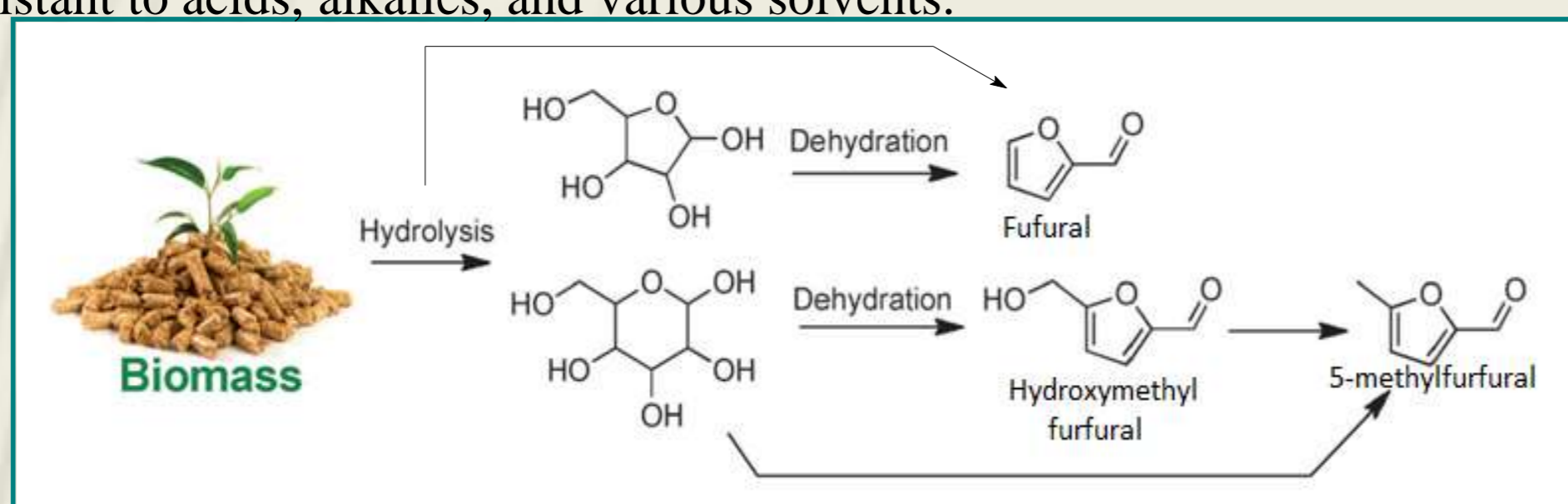
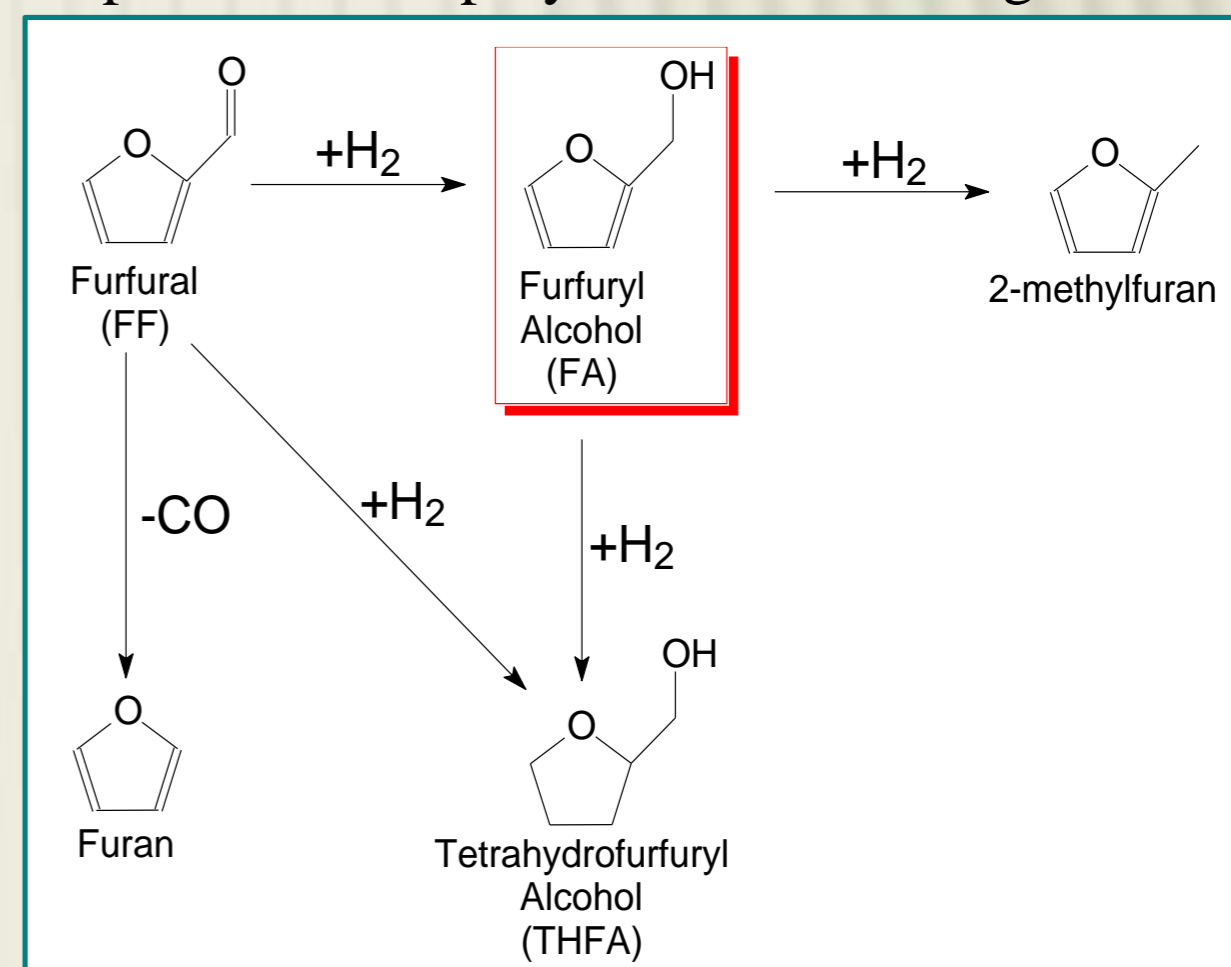


Fig. 1. Acid-catalyzed hydrolysis of biomass and dehydration of sugars to furanic aldehydes



Scheme 1. The possible routes of Furfural hydrogenation

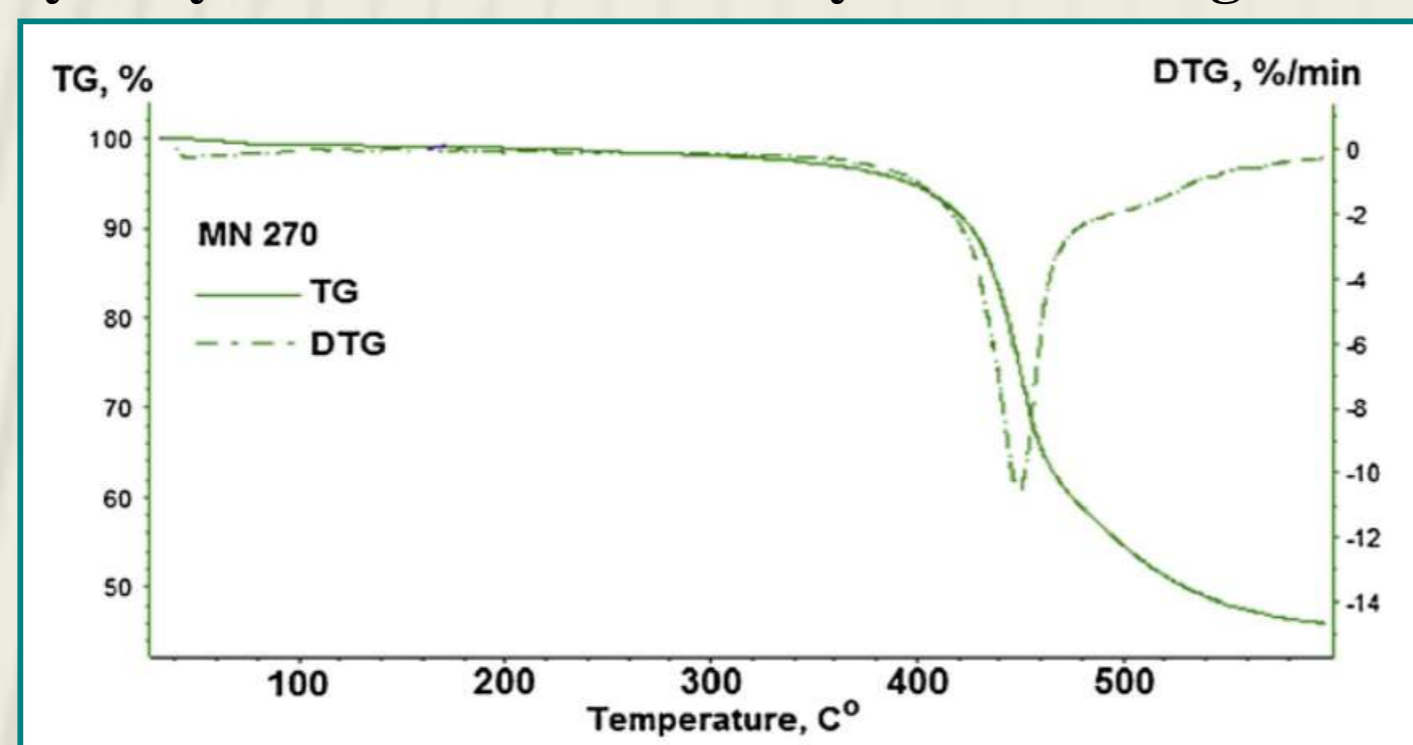


Fig. 2. Results of thermogravimetric analysis of HPS MN 270

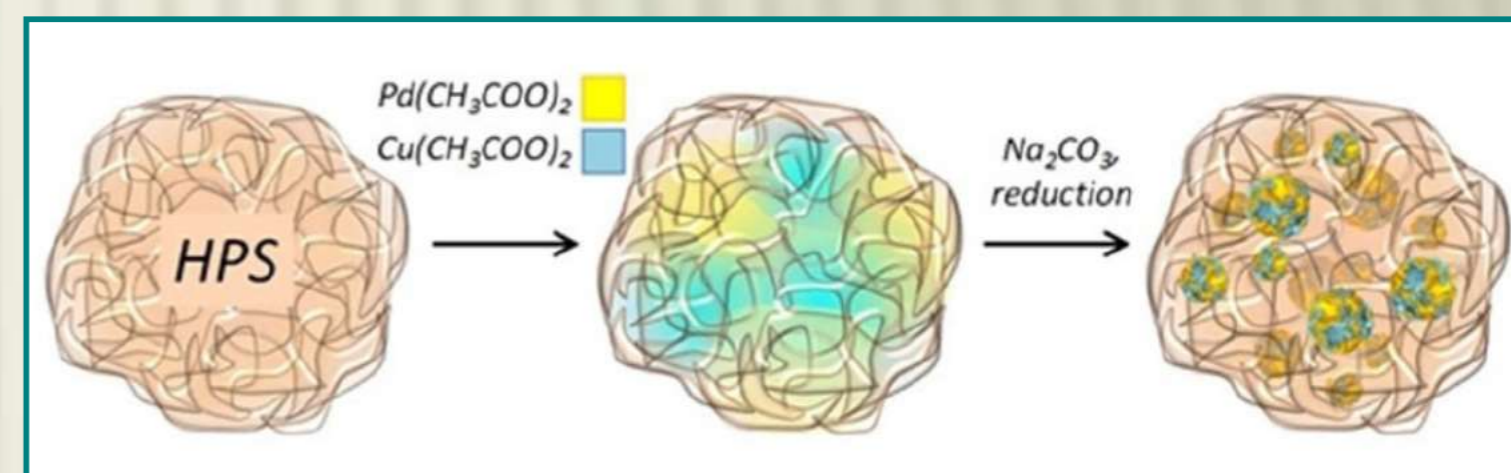


Fig. 6. Schematic representation of the formation of Pd-Cu NPs in the HPS pores

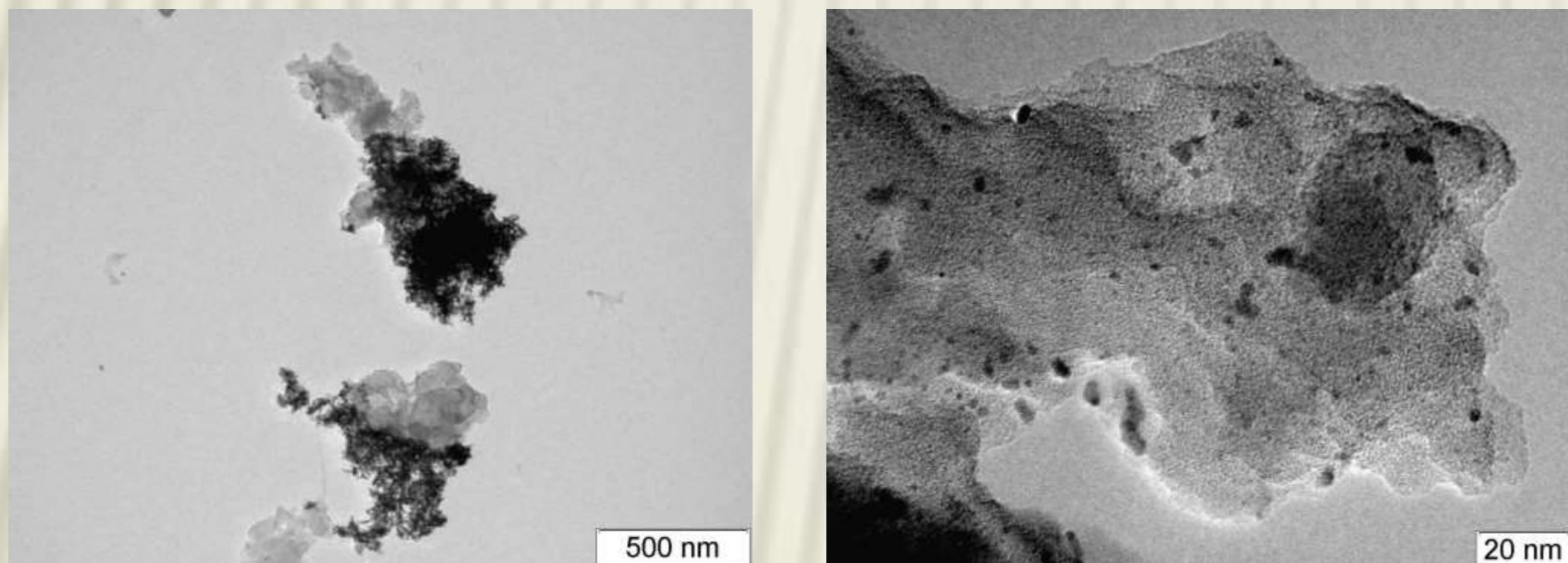


Fig. 3. TEM image of Ru-PS catalyst

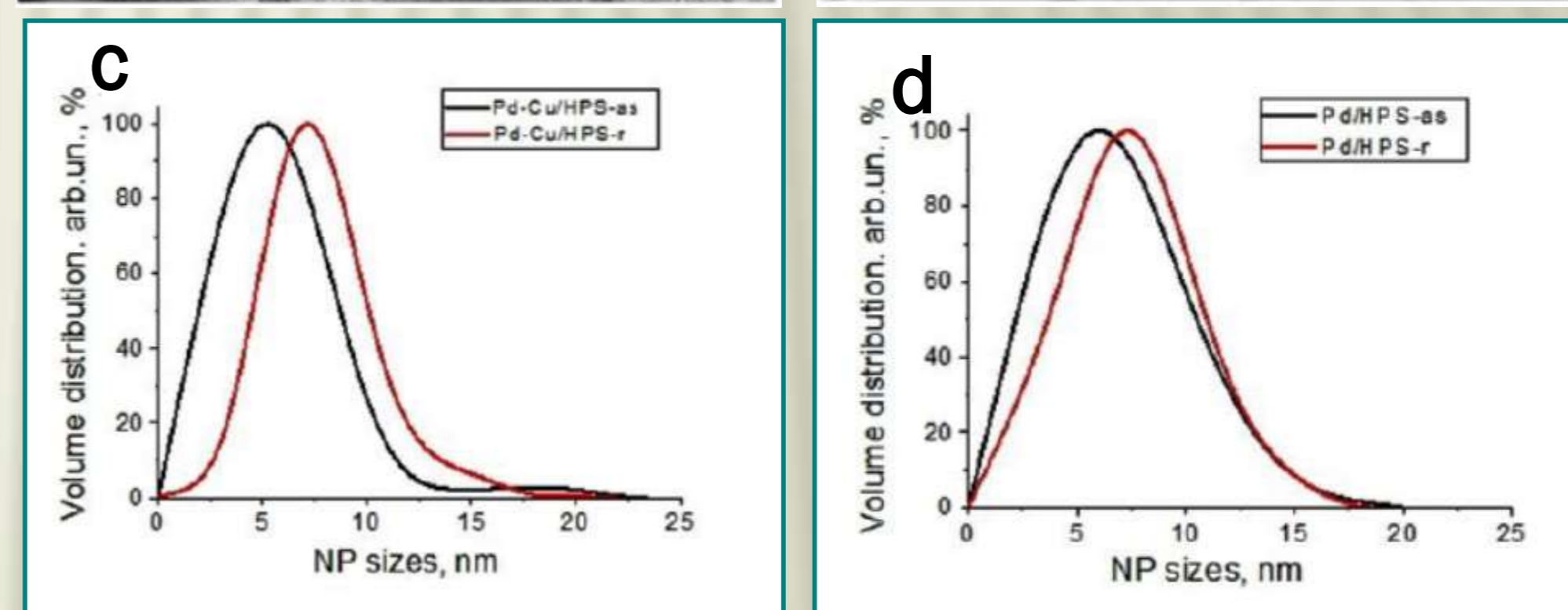
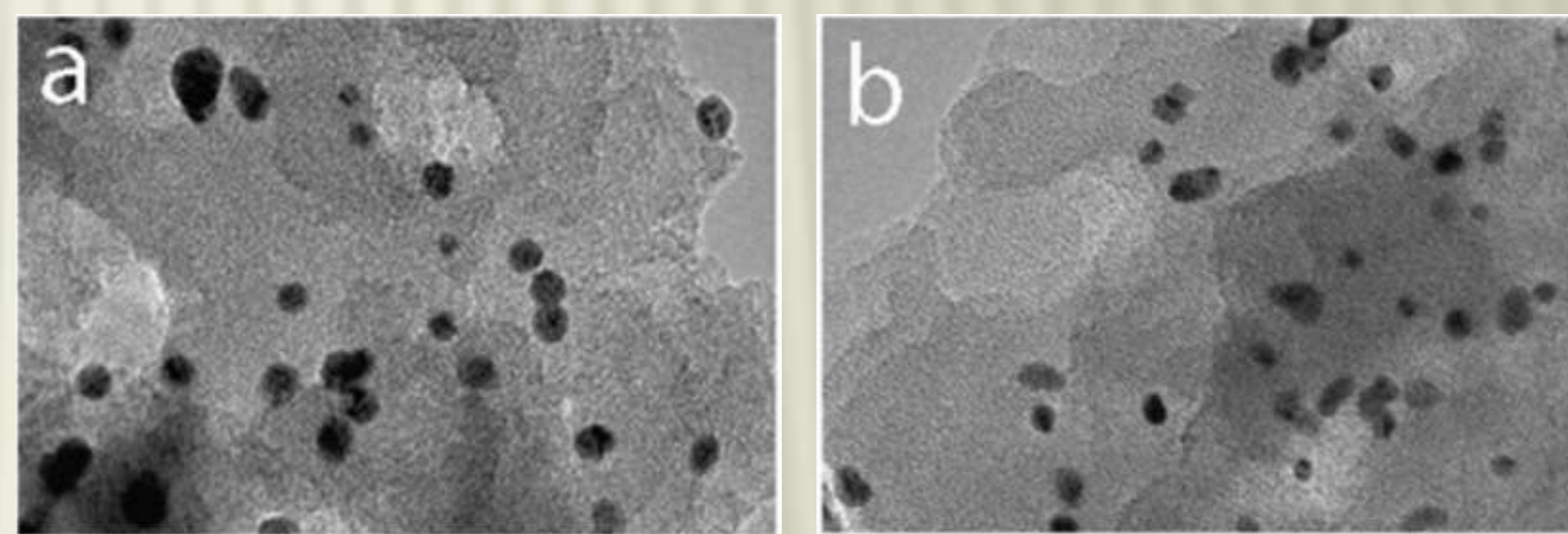


Fig. 7. TEM images (a, b), volume NP size distribution from the SAXS data (c, d)

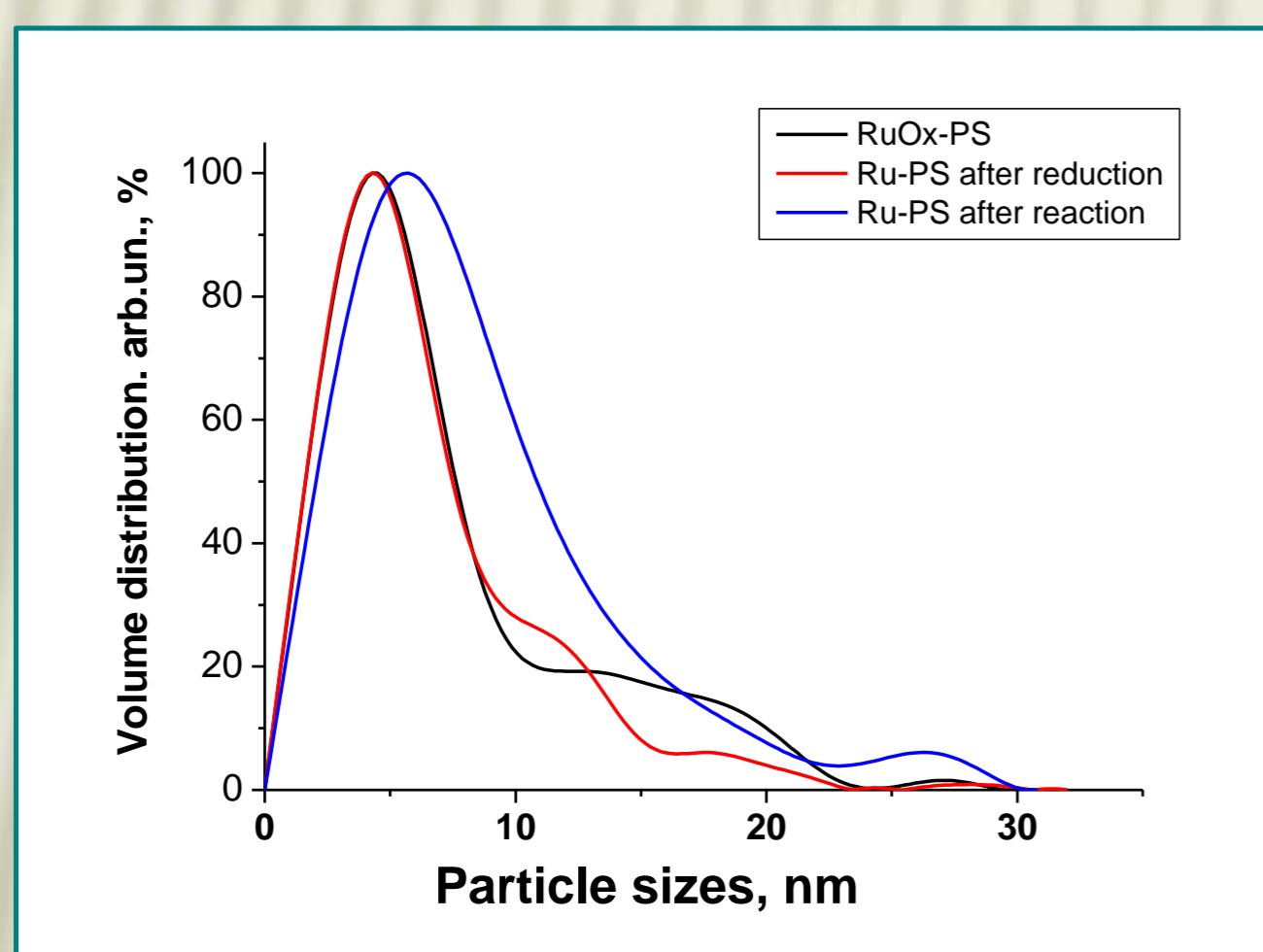


Fig. 4. Volume NP size distribution from the SAXS data

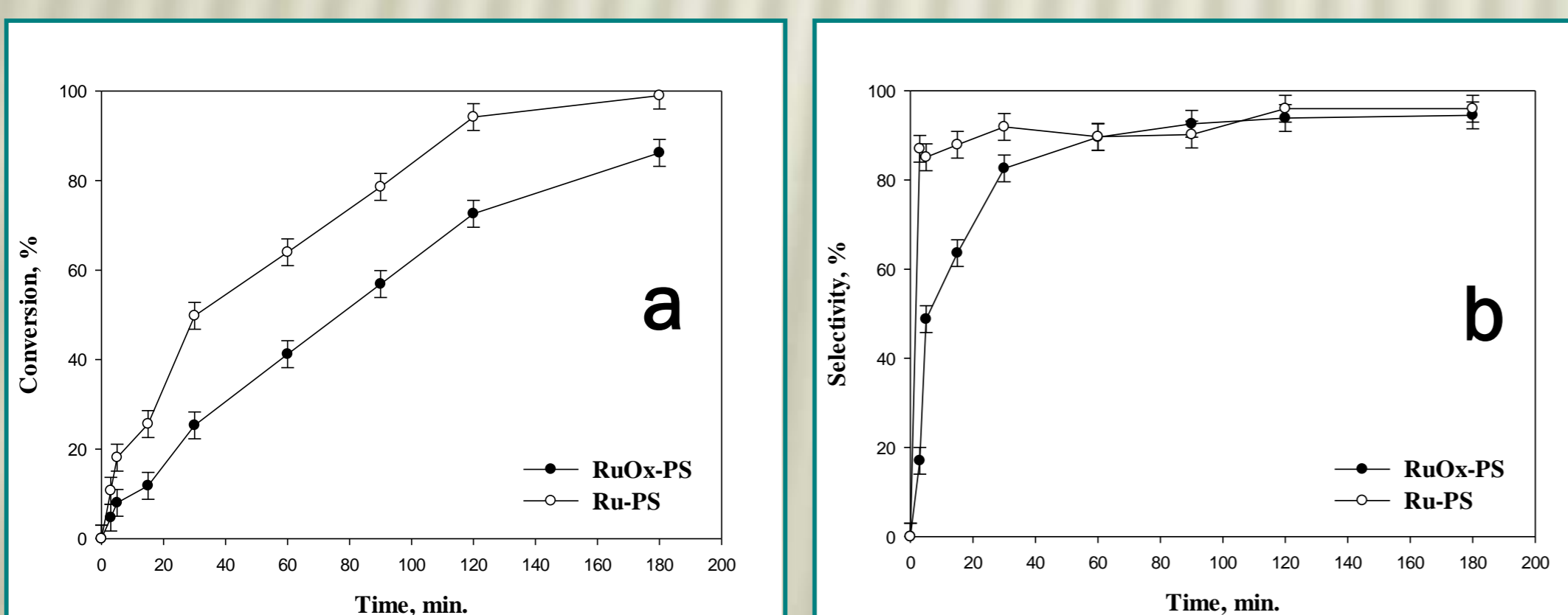


Fig. 5. Dependence of the conversion of furfural (a) and the selectivity of furfuryl alcohol (b) on the reaction time in the presence of ruthenium catalysts

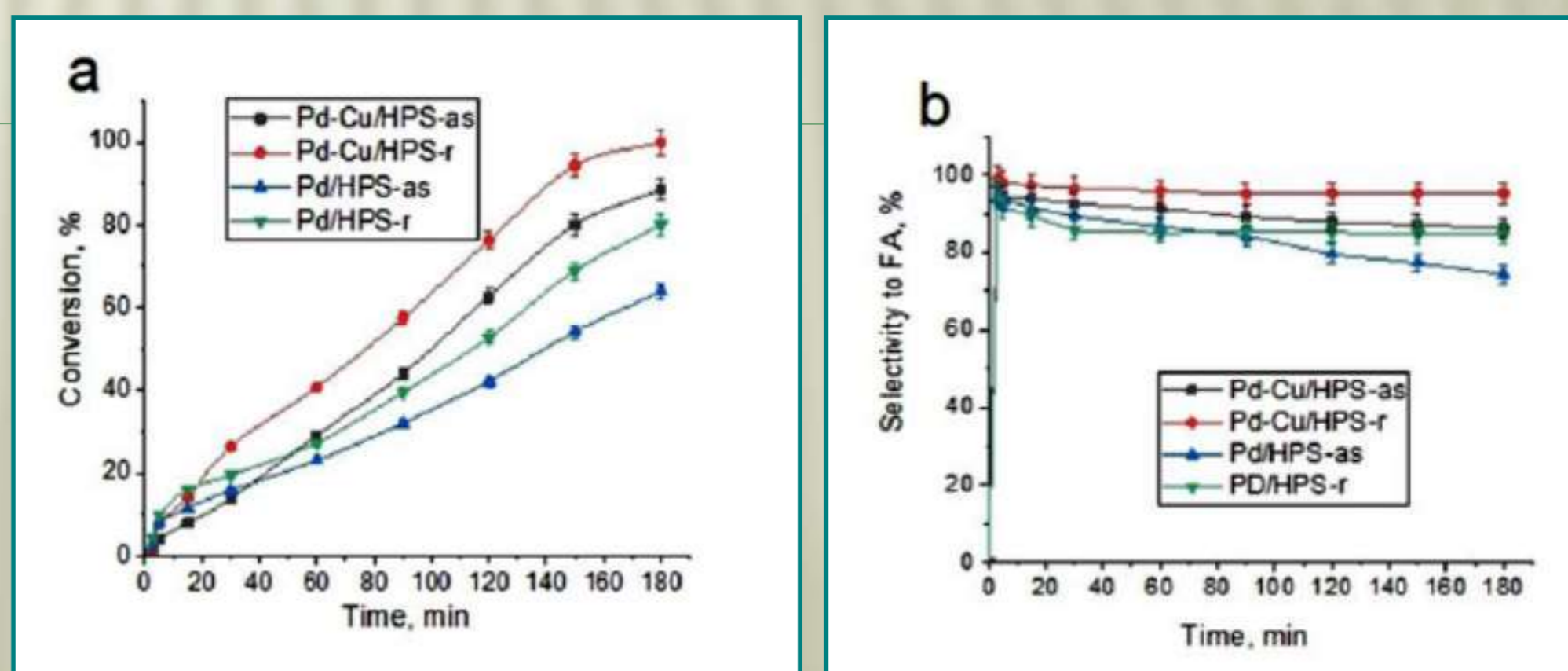


Fig. 8. Dependences of the conversion of furfural (a) and the selectivity of furfuryl alcohol (b) on the reaction time

Acknowledgments

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