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TOPIC(s) : Biomass conversion / Homogenous, heterogenous and biocatalysis

Chemical Production of Chemicals and Nutrients from Renewable Resources

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PURPOSE OF THE ABSTRACT

Future society will increasingly rely on renewable resources for fuels, chemicals and nutrients. Biomass offers a wide range of starting materials for value-added chemicals and fuels, however, components in biomass feedstock bristle with functional groups, reducing their stability to withstand high temperatures usually used to process petrochemicals. In this talk, I will highlight several projects under development in my group at this moment (Scheme 1), including 1) shell biorefinery, referring to the fractionation and transformation of shells of crustacean species and insects for valued-added chemicals and materials; 2) conversion of lignin into essential aromatic chemicals such as phenol and terephthalic acid; 3) chemical synthesis of amino acids from biomass and 4) hydrogen-free deoxygenation of lipids into hydrocarbon fuels.

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FIGURES

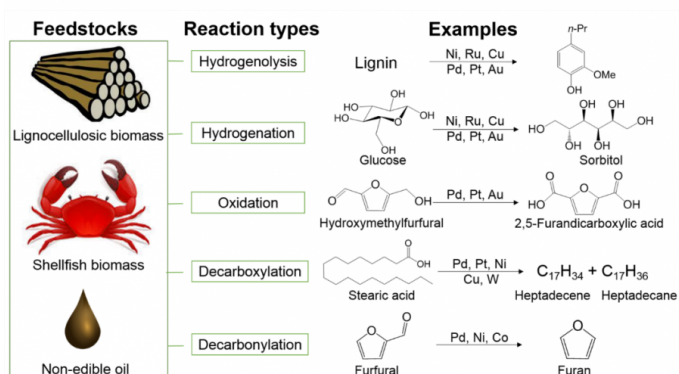


FIGURE 1

Scheme 1

Major biomass conversion routes via metal catalysed reactions.

FIGURE 2

KEYWORDS

Biomass | Green Chemistry | Renewable Chemicals | Organonitrogen Chemicals

BIBLIOGRAPHY

Ning Yan obtained his bachelor and PhD degrees from Peking University in 2004 and 2009, respectively. Thereafter, he worked as a Marie-Curie Research Fellow at Ecole Polytechnique Federale de Lausanne, Switzerland. He joined the National University of Singapore (NUS) as an Assistant Professor and established the Lab of Green Catalysis in 2012, and was promoted to the rank of Associate Professor in 2018. His major research interest includes catalytic biomass conversion, green chemistry & engineering, and catalyst development. Recently, he won the Young Investigator Award from NUS, the Young Researcher Award from Global Green Chemistry Centres Network (G2C2) and the RSC Environment, Sustainability and Energy Division Early Career Award from Royal Society of Chemistry. He also serves as Editor for Molecular Catalysis.