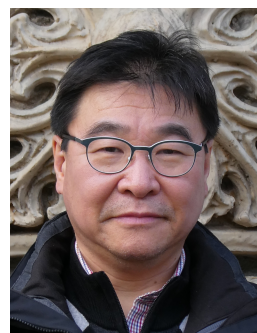


Development of heterogeneous catalysts for C-O hydrogenolysis and H₂-driven deoxydehydration

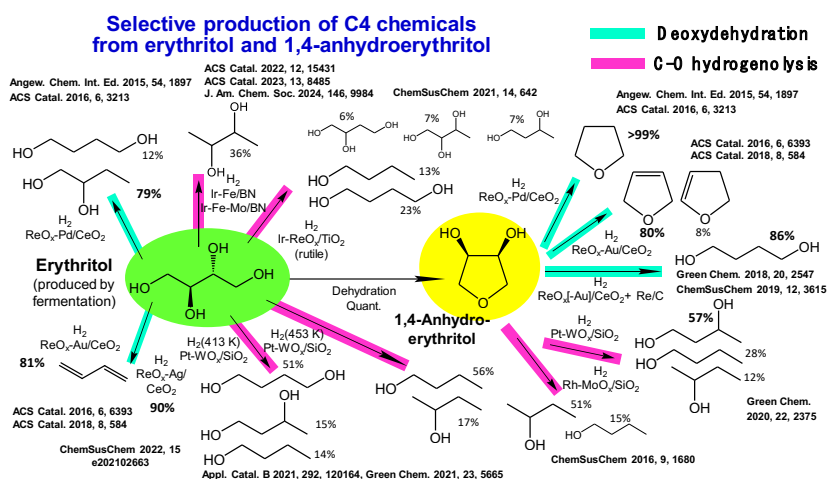
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Hydrodeoxygenation is one of important catalytic reactions in biomass refineries for the production of fuels and chemicals [1]. Our group has been developing the heterogeneous catalysts for C-O hydrogenolysis and H₂-driven deoxydehydration, and we have reported the effective bimetallic catalysts for C-O hydrogenolysis such as Rh-ReO_x, Rh-MoO_x, Ir-ReO_x, Pt-WO_x and Ir-Fe catalysts, and that the effective supported ReO_x/CeO₂ and MoO_x/TiO₂ catalysts modified with metal particles for deoxydehydration using H₂ as a reducing agent. These catalysts have been applied to the reaction of a variety of biomass-derived substrates, for example, to the hydrodeoxygenation of erythritol and 1,4-anhydroerythritol, which is described in this presentation. At present, C₄ chemicals have been derived from naphtha, which will be decreased by the shift to gas industries. C₄ chemicals are one of building blocks in the petrochemical industry. Therefore, the synthesis of C₄ chemicals from biomass can be a promising method for the substitution of naphtha. It has been known that erythritol is produced by the fermentation of glucose and glycerol [2]. As shown in figure below, the development of heterogeneous catalysts enables the selective conversion of erythritol and 1,4-anhydroerythritol using H₂ as a reductant to various C₄ chemicals such as 1,4-, 1,2-, 1,3-, and 2,3-butanediols, tetrahydrofuran, dihydrofuran, butadiene, and so on [3-5].



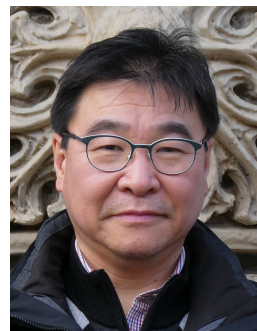
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BIO

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