第220回講演会
【開催：2023年8月2日（水）】

主催　中国地区化学工学懇話会

下記の要領で講演会を開催します。多数の方のご参加を頂きますようお願い致します。

記

日 時：2023年8月2日（水）15:30～16:30
場 所：広島大学工学部117講義室
交 通：山陽本線西条駅下車、バス15 分、大学会館前下車
　　山陽新幹線東広島駅下車、タクシー10 分
　　広島バスセンターから直行バス約1時間、大学会館前下車

講 演：Conversion of waste biomass to platform chemicals and fuels using a catalytic membrane reactor

講 師：Dr. Ranil Wickramasinghe, Distinguished Professor
　　Ralph E Martin Department of Chemical Engineering, University of Arkansas

講演内容：
Global warming due to release of greenhouse gases coupled with increasing world energy demands requires immediate development of renewable resources for production of fuels and chemicals. Though many technologies exist to convert biomass feedstocks to fuels and value-added products, commercialization has been slow. The high cost of production of biobased chemicals and fuels frequently makes them uncompetitive compared to fossil fuel derived products. Here a patented catalytic membrane reactor has been developed that can convert a variety of lignocellulosic biomass feed stocks (corn stover, corn fiber, wheat straw, almond and walnut shells, coffee ground, rice husks, food waste etc.) to sugars, hydroxymethylfurfural (HMF) and levulinic acid with high yield and high selectivity. HMF and levulinic acid are considered critical platform chemicals for the production of numerous chemicals, resins, fibers etc as well as intermediates for the production of aviation fuels.
Our catalytic membrane reactor consists of a ceramic membrane substrate immobilized with a dual functional catalyst by grafting polystyrene sulfonic acid (PSSA) and polyvinyl imidazolium chloride (polyionic liquid, PIL) chains from the surface of the membrane. The PSSA chains catalyze biomass hydrolysis and the subsequent conversion to levulinic acid. The neighboring (PIL) chains help solubilize lignocellulosic biomass and enhance the catalytic activity of the PSSA chains. The PSSA chains were synthesized via surface-initiated atom-transfer radical polymerization whereas the adjacent PIL chains were synthesized via UV-initiated free radical polymerization.
In this presentation the catalytic membrane will be described. Results for production of sugars, HMF and levulinic acid will be presented. The catalytic membrane technology developed here could provide a more economically viable method for utilizing our vast waste biomass thus promoting a circular economy.

参加費：無料

申込先：FAX または電子メールでお申し込み下さい。
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