

第232回講演会
【開催:2024年8月5日(月)】

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: 2024年8月5日(月) 16:00~17:00

場所: 広島大学工学部 105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: Design of Photocatalytic Membrane Reactor for Wastewater Remediation

講師: Dr. Chechia Hu

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講演内容:

Wastewater treatment has been received considerable attention recently. In the present work, MIL-88B(Fe,Co) was prepared and grown on an Al₂O₃ membrane as a photocatalytic membrane reactor. After cobalt doping, the MIL-88(Fe,Co) exhibited visible-light absorption, improved charge transfer, and enhanced electron-hole pair separation. With the addition of peroxymonosulfate (PMS), MIL-88B(Fe,Co) powder had superior photocatalytic activity for phenol removal. The reactive seeding growth of MIL-88B(Fe,Co) was utilized to prepare a MIL-88B(Fe,Co)@Al₂O₃ membrane and integrated in a filtration module to fabricate a photocatalytic membrane reactor (PMR). The permeate flux of the photocatalytic membrane reactor (PMR) was approximately 3500 L m⁻² h⁻¹ bar⁻¹ (LMH), and with over 90% phenol removal efficiency. The PMR system also exhibited high stability, reusability, recyclability, and high photocatalytic activity for phenol degradation over 10 cycles using MIL-88B(Fe,Co)@Al₂O₃ membrane with the addition of PMS. In addition, NH₂-grafted MIL-88B(Fe) was prepared by reactive seeding growth method onto the Al₂O₃ membrane as well. The PMR system with NH₂-MIL-88B(Fe)@Al₂O₃ membrane was used for LDPE filtration and degradation. The PMRs show high permeance flux and reactivity to degrade LDPE. Moreover, The LDPE degradation followed the Norrish mechanism by different radicals generated from photocatalysis. This is the first study to demonstrate a MOF-based Al₂O₃ membrane via a reactive seeding growth method to fabricate a PMR system, which is an effective and sustainable process for wastewater treatment.

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。

中国地区化学工学懇話会

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