

酸性官能基が空孔表面に露出した多孔質有機塩の構築とそのアンモニア吸着能

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Construction of porous organic salts with acidic functional groups exposed on the pore surface and investigation of their ammonia adsorption capacity (¹*School of Engineering, Osaka University*, ²*Graduate School of Engineering, Osaka University*) ○Ryota Yamazaki,¹ Saito Onishi, Shotaro Nakamura,^{1,2} Norimitsu Tohnai^{1,2}

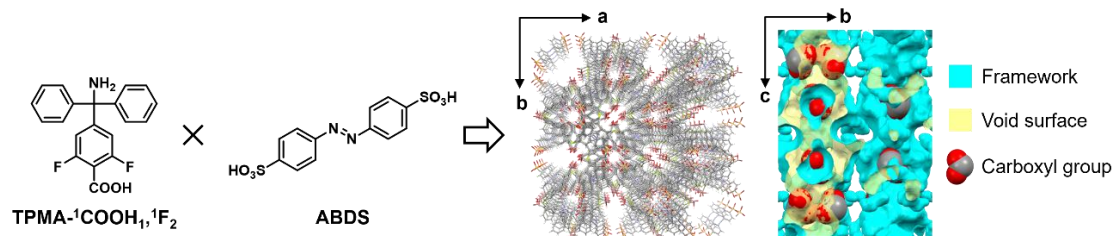
Previously, we have reported porous organic salts (POSs) composed of aromatic sulfonic acids and bulky triphenylmethyamine (TPMA) derivatives based on charge-assisted hydrogen bonds. Furthermore, it was elucidated that the substituents introduced at the *para*-positions of the benzene rings of TPMA were exposed on the pore surface of POSs.

In this study, we constructed POSs with acidic functional groups exposed on the pore surface, which were composed of azobenzenedisulfonic acid (ABDS) and TPMA derivatives bearing carboxyl groups at the *para*-position and fluoro groups at the *meta*-position of the benzene rings. The introduction of fluoro groups at the *meta*-position has been demonstrated to enhance the acidity of the carboxyl groups, which is expected to strengthen interactions with ammonia and thereby enhance ammonia adsorption capacity. Here, we report the specific adsorption behavior of the POS toward ammonia.

Keywords : Porous organic salts; Gas adsorption; Ammonia

我々はこれまで芳香族スルホン酸と嵩高いトリフェニルメチルアミン (TPMA) 誘導体が電荷補助型水素結合により連結して構築される多孔質有機塩 (Porous Organic Salts; POSs) を報告してきた。この TPMA 誘導体のベンゼン環のパラ位に導入した置換基が空孔表面に露出することが明らかになっている¹⁾。

本研究では、TPMA のベンゼン環のパラ位にカルボキシ基、メタ位にフッ素基を導入した TPMA 誘導体とアゾベンゼンジスルホン酸 (ABDS) を用いて、酸性官能基が空孔表面に露出した POS を構築した。メタ位のフッ素基の導入によりカルボキシ基の酸性度が増加し、アンモニアとの相互作用の向上とそれに伴うアンモニア吸着能の向上が期待される。本発表では、POS のアンモニアに対する特異的な吸着挙動について報告する。



- 1) T. Ami, K. Oka, K. Tsuchiya, N. Tohnai, *Angew. Chem. Int. Ed.*, **2022**, 61, e202202597.