

有機電子アクセプターの電子状態に及ぼす特異な分子内水素結合の効果

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The Emergent Intramolecular Hydrogen Bonding Effect on the Electronic Structures of Organic Electron Acceptors

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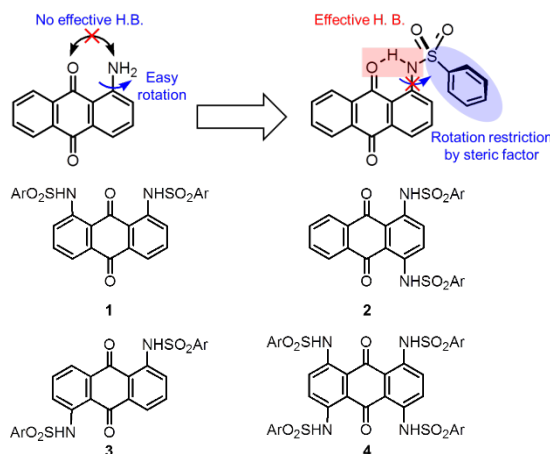


Figure 1. Molecular design of arylsulfonamide-substituted AQ to obtain significant intramolecular N-H•••O hydrogen bonding interaction in solution and molecular structures of arylsulfonamide-substituted AQ derivatives **1-4**.

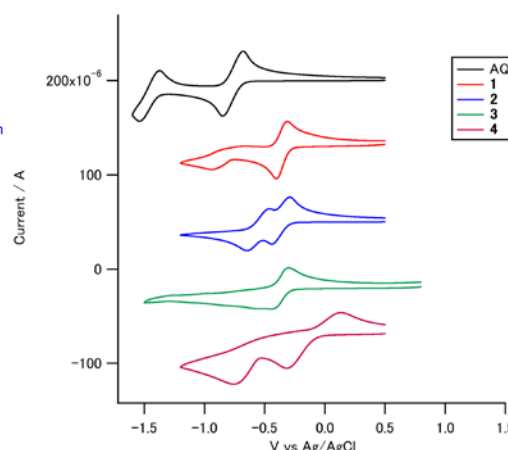
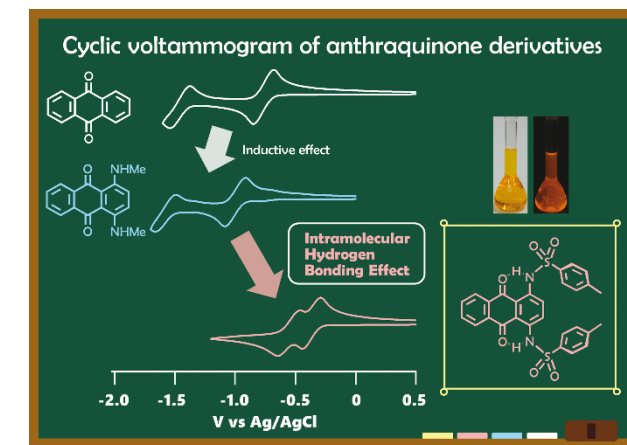


Figure 2. Cyclic voltammogram diagrams of molecules **1-4** together with AQ in DMF (0.1 M Bu_4NBF_4 vs Ag/AgCl).



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アントラキノン(AQ)誘導体の電子親和力を制御するために、分子内水素結合を利用する新たな手法を開発した。嵩高い水素結合性のアリルスルホン基をAQ誘導体に導入すると、有効な分子内N-H•••O=水素結合を形成し、正に帯電したプロトンが分子内水素結合によりアニオンラジカル状態を安定化する事で電子アクセプター性を向上させた。

A new strategy for controlling the electron-accepting ability of an anthraquinone (AQ)-based p-molecule is proposed to take advantage of intramolecular hydrogen bonding interactions. The electron-accepting properties of AQ are enhanced by the introduction of bulky arylsulfonamide groups into AQ derivatives due to the formation of effective intramolecular N-H•••O hydrogen bonding interaction.