

报告题目：Metal-Organic Frameworks and Mesoporous Nanoparticles for Environmental Applications

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报告摘要：We are studying covalently extended materials that are cationic in charge. The potential applications of these metal-organic and inorganic-organic materials are based on their extra-framework anions. Their cationic charge coupled with their intrinsic stability allows for applications not possible with anionic clays and zeolites. This talk will focus on our recent advances in the reversible trapping of waterborne anionic pollutants, especially perchlorate and chromate. Analysis of both the exchange solid and exchange solution allow us to follow the kinetics of the uptake and release. The materials display greater capacity, reversibility and selectivity compared to conventional anion exchange resins and hydrotalcites/layered double hydroxides. Our efforts into mesoporous silica nanoparticles will also be discussed for the removal of organosulfur compounds from fuel as well as the creation of antimicrobial photoactive composites.