ADVANCES IN UNDERSTANDING HYDROBIOGEOCHEMICAL PROCESSES IMPORTANT IN SOIL PROTECTION

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Abstract: This paper will focus on recent breakthroughs in elucidating hydrobiogeochemical processes and reactions that are important in soil protection and will delineate frontiers for the present decade and beyond. Frontiers will undoubtedly involve multiple spatial and temporal scale investigations, elucidation of reactions at biological, chemical, and physical interfaces, and the use of advanced technologies in combination with interdisciplinary research efforts to unlock important information on areas such as: speciation and remediation of contaminated soils; cycling of trace elements and nutrients and impacts on global climate change; development of field scale hydrologic and geochemical models to accurately predict the rate, fate, and transport of contaminants in the subsurface environment; elucidation of mechanisms for microbial transformations of contaminants; and enhanced understanding of rhizosphere chemistry in various environmental settings.