

Effects of electrostatic interaction in adsorptive removal of organic dyes by Ti_3C_2 -MXenes

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MXenes, a new class of 2D materials, have recently attracted considerable attention as a promising adsorbent in environmental remediation. It was previously shown that some selected aqueous organic dyes were successfully sequestered by MXenes yet a systematic investigation on the adsorptive performance of MXenes for a wide variety of dyes still lacks in more realistic aquatic environments than a clean lab deionized water. Herein, we investigate the adsorptive performance of delaminated Ti_3C_2 -MXenes for six different organic dyes in aquatic media with various pH values and ionic strengths. The results strongly suggest the importance of electrostatic interaction between the ionizable functional groups of MXenes and dyes in the removal efficiency, providing a rational strategy to optimize the aquatic conditions for efficient removal of different types of organic dyes.