



## Electrosorption of different cations and anions with membrane capacitive deionization based on carbon nanotube/nanofiber electrodes and ion-exchange membranes

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### ABSTRACT

A membrane capacitive deionization (MCDI) device, which combines ion-exchange membranes and carbon nanotube and carbon nanofiber (CNT-CNF) film electrodes, has been developed to investigate the selective electrosorption of different cations and anions. The CNT-CNF films are synthesized by low pressure and low temperature thermal chemical vapor deposition. The experimental results show that multivalent cations and anions are better adsorbed from aqueous solution and for cations or anions with same charge, the one with smaller hydrated radius will be more effectively removed.

**Keywords:** Carbon nanotube and carbon nanofiber; Membrane capacitive deionization; Ion-exchange membranes; Hydrated radius

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