Influence of biofouling on the lithium manganese oxide and its dissolution characteristics near the Sacheon Harbor, South Korea

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In this study, the adsorbent material which made by lithium manganese oxide–based have been developed for the recovery of lithium from seawater. To maximize the recovery efficiency, it is important to prevent microfouling of lithium adsorbents by marine bacteria [1]. To understand of marine biofouling by bacterial communities on the lithium recovery adsorbent's surface, on-site experiment carried out in Sacheon Harbor, Gangneong, Korea. The lithium recovery adsorbents were devided into the polymer resorviors to immersing in seawater for a certain period of time. The biofilm which was developed on the surface of lithium adsorbents were collected by 10-day, 30-day after. Marine biofilme were collected and cultured in marine broth, isolated and identified by 16S rDNA. *Alteromonas* sp., *Pseudoalteromonas* sp. and *Vibrio* sp. were dominant species both adsorbents and polymer resoirvoirs. CLSM (confocal laser scanning microscope) and SEM-EDS was used to detect the degree of defacement on surfaceof lithium manganese oxide. Dissolution experimnet was desigined to varify the chemical stability of lithium manganese oxide as a sustainable adsorbent from leach soultion with metals present. For the analysis of every elements from dissolution of adsorbent was based on duration of exposure and material size. ICP-OES was applied for the varification of elements analysis results such as arsenics.

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