

Seasonal Characteristics of Marine biofouling on the lithium adsorbents in Okgye Harbor, Korea

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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. To understand of marine biofouling by bacterial communities on the lithium recovery adsorbent's surface, on-site experiment carried out in Okgye Harbor, Gangneong, Korea. The lithium adsorbents exposed to seawater for a certain period of time and collected after 7-day, 14-day and 21day in May, August and November. Confocal laser scanning microscope (CLSM) was used to detect the degree of defacement on surface of lithium adsorbents. Attached to lithium adsorbents biomass of phytoplankton were observed using optical microscope and UV-spectrometer. As the results, abundances of attached phytoplankton were augmented during longer immersing time. Biomass of phytoplankton was higher in 14-day exposing sample than 21-day sample in August. CLSM images were supported to amount of biofouling by fluorescence signals. In summer case, the amount of microbial fouling was decrease after 21-day exposing.



Figure 1. Biomass of microbial using UV-spectrometer

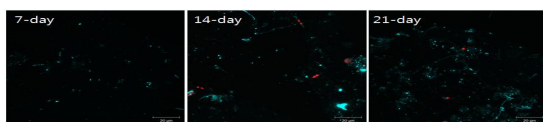


Figure 2. CLSM images of microbial fluorescence on the lithium adsorbents in August

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