Electrospun nanofiber membrane adsorber with lithium ion sieves for selective and continuous Li recovery from coal ash leachate

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Environmental problems associated with upsurge of coal ash (CA) production provides an alternative source of valuable metals like lithium. In this study, Li^+ was mined from CA through mild acid elution and supernatant collection with pH neutralization. Effective Li^+ recovery was investigated via convective single- and multiple-pass permeation in an electrospun adsorbent nanofiber membrane embedded with lithium ion sieves (LIS) H_2TiO_3 followed by membrane desorption using mild acid solution. The developed process is simple to operate and offers promising option for continuous Li^+ recovery from Li-enriched secondary resources. This research was supported by the National Research Foundation of Korea (NRF) funded by the Ministry of Science and ICT (No. 2017R1A2B2002109 and No. 2017R1D1A1B03028102) and by the Ministry of Education (No. 2009-0093816).