

The Extraction and Stripping of Hg(II) from Produced Water via Hollow Fiber Contactor

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Abstract : The separation of Hg(II) from produced water by hollow fiber contactors (HFC) was investigated. This system included two hollow fiber modules in series connecting. The first module used for the extraction reaction and the second module for stripping reaction. Aliquat336 extractant was fed from the organic reservoirs into the shell side of the first hollow fiber module and continuous to the shell side of the second module. The organic liquid was continuously feed recirculate and back to the reservoirs. The feed solution was pumped into the lumen (tube side) of the first hollow fiber module. Simultaneously, the stripping solution was pumped in the same way in tube side of the second module. The feed and stripping solution was fed which had a counter current flow. Samples were kept in the outlet of feed and stripping solution for 1 hour and characterized concentration of Hg(II) by Inductively Couple Plasma Atomic Emission Spectroscopy (ICP-AES). Feed solution was produced water from natural gulf of Thailand. The extractant was Aliquat336 dissolved in kerosene diluent. Stripping solution used was nitric acid (HNO₃) and thiourea (NH₂CSNH₂). The effect of carrier concentration and type of stripping solution were investigated. Results showed that the best condition were 10 % (v/v) Aliquat336 and 1.0 M NH₂CSNH₂. At the optimum condition, the extraction and stripping of Hg(II) were 98% and 44.2%, respectively.

Keywords : Hg(II), hollow fiber contactor, produced water, wastewater treatment

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