

Ambient temperature removal of SF₆ by electrogenerated Ni(I) electron mediator at electroscrubber

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SF₆ has global warming potential of 23900 times higher than the CO₂ and no proper method yet derived. This is the first report deals ambient temperature removal of SF₆ using mediated electrochemical reduction at electro-scrubbing process. First, [Ni(I)(CN)₄]³⁻ was generated by electrochemical way using paired electrolysis at cathodic half-cell in 10 M KOH solution. The concentration of electrogenerated Ni(I) was derived from potentiometric titration and different applied current density used to establish the suitable condition. The electrogenerated Ni(I) pumped on the scrubber column to remove the SF₆ which was entered under the wet scrubbing column. The removal of SF₆ was monitored by online FTIR gas analyzer which was attached to the column exit. The feed concentration and gas flow rate effect were analyzed on SF₆ removal and discussed.