

Electrogenerated Ni(I) electron mediator facilitates an ambient temperature removal of N₂O to NH₃ at electroscrubber

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Removal of N₂O at room temperature with useful product is essential at current situation. This is the first report deals ambient temperature removal of N₂O to NH₃ 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 N₂O which was entered under the wet scrubbing column. The removal of N₂O 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 N₂O removal and discussed. On line GC results compared for the formation of NH₃ during removal of N₂O.

Key words: MER, N₂O removal, electro-scrubbing, Greenhouse gas removal