

Effect of heterometallic homogeneous electron mediators on continuous N₂O gas removal: An electrochemical and electroscrubbing

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N₂O gas removal generally done by high temperature catalytic process. Here in, a room temperature electroscrubbing method was developed to remove N₂O gas. A combination of homogeneous mediator precursors such as [N(II)(CN)₄]²⁻+ [Fe(II)(CN)₆]⁴⁻, [N(II)(CN)₄]²⁻+ [Fe(III)(CN)₆]³⁻, [Co(II)(CN)₅]³⁺ [Fe(III)(CN)₆]³⁻, and N[Co(II)(CN)₅]¹⁻ were used to evaluate the N₂O gas removal. Based on the ORP (oxidation/reduction potential) value, an active low valent ion in the heterometallic complex was identified, which was then correlated with UV-visible spectral results. Through the difference in inline FTIR gas analyzer results, selected the effective heterometallic homogeneous electron mediator on N₂O removal.

Keywords: N₂O removal, MER, heterometallic electron mediators, Electro-scrubbing