

Ionic Liquids as Corrosion Inhibitors in CO₂ Capture Systems

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Abstract : We present the viability of using thermally stable, practically non-volatile ionic liquids as corrosion inhibitors in aqueous monoethanolamine system. Carbon steel 1020, which widely used as construction material in CO₂ capture plants, has been taken as a test material. Corrosion inhibition capacities of typical room-temperature ionic liquids constituting imidazolium cation in concentration range $\leq 3\%$ by weight in CO₂ capture applications were investigated. Electrochemical corrosion experiments using the potentiodynamic polarization technique for measuring corrosion current were carried out. The results show that ionic liquids possess ability to suppressing severe operational problems of corrosion in typical CO₂ capture plants.

Keywords : carbon dioxide, carbon steel, monoethanolamine, corrosion rate, ionic liquids, tafel fit

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