A comparative analysis of single and bimetal coated membrane electrode divided Clarks cell for online air pollutant monitoring during electrochemical removal at electroscrubbing process

문일식†, G.Muthuraman, Perumal Silambarasan
순천대학교
(ismoon@sunchon.ac.kr†)

Metal coated membrane Clarks cell generally used for electrochemical gas sensor application but effect bimetal coated membrane electrode can be an added advantageous. In the present investigation, Ag and Ag-Ni or Ag-Co metal ions coated Nafioni324 membrane electrode divided cell was developed and compared in amperometric detection of air pollutants. Ag and Ag-Ni or Ag-Co were chemically coated on the Nafion324 membrane and used in filter press technique to make a cell with one side having 0.1 M KOH electrolyte and gas phase cathodic half-cell. Based on the cyclic voltammetry and linear sweep voltammetry analyses, the gas phase redox peak was fixed for detection of selected gas pollutants. Then sense a selected air pollutants by amperometric method at different suitable applied voltage. The current with different feed concentration were compared with in-situ FTIR gas analyzer concentration and derived calibration plot.