

Zeolite coated ceramic membrane tubular reactor for the metal ion oxidation

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Tubular electrochemical cells are flow type reactors which are normally fitted with Alumina tubular membrane as the divider between anode and cathode. But, the ordinary membrane has large pore size and hence smaller metallic ions diffuse in to cathode from anode compartment under the working potential of the cell. Therefore, we have attempted the use of a novel zeolite coated tubular membrane in the divided electrolytic cell. Owing to the smaller pores of zeolite materials, the metallic cations are not allowed to pass across the membrane and hence effectively separate the anode and cathode compartments without mixing each other's electrolyte species. In the present study we have used the zeolite coated ceramic membrane for the production of metal (Cobalt) ion oxidant in nitric acid medium. Cobalt salt was taken as the model metal ion precursor and the influence of process parameters such as concentration of metal ion, temperature of the electrolyte solution, current density and the electrolyte concentration are investigated and presented.